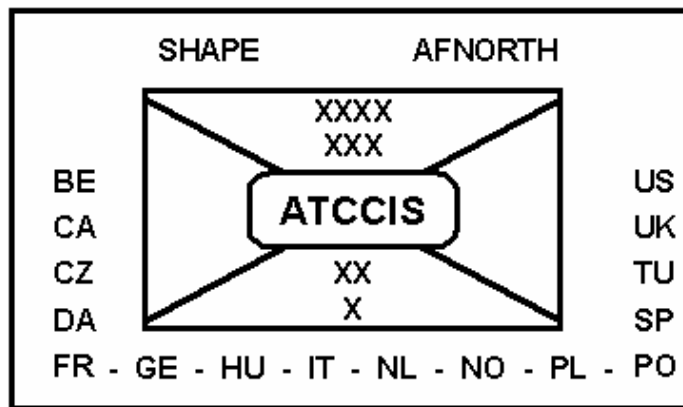


**ATCCIS WORKING PAPER 5-14**

**Edition 5.0**

# ATCCIS 2000 PHASE V WORK FOR THE RECORD



**ATCCIS Baseline 2.0**

**18 March 2002**

**ARMY TACTICAL COMMAND AND CONTROL INFORMATION SYSTEM  
PERMANENT WORKING GROUP  
SHAPE, Belgium**

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## Record of Changes

Edition	Date	Comments
Edition 5.0	18 Mar 2002	Document for ATCCIS 2000 End of Phase V.

### Configuration Control Authentication:

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Maj. R. de Solis, ATCCIS Configuration Control Manager.

**Contributing Nations/Agencies:** AFNORTH, BE, CA, CZ, DA, FR, GE, HU, IT, NL, NO, PL, PO, SHAPE, SP, TU, UK, US.

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## **PREFACE**

### **Introduction**

NATO operations require deployed forces to form part of combined and joint coalition formations. Earlier operations focused on general war requirements. Recently NATO forces are increasingly employed in Crisis Response Operations. Both such operations require all participating national units to operate in cooperation with each other. To operate effectively force commanders require a common view of the operational area that is both timely and accurate, and supporting command and control (C2) systems need to pass information within and across national and language boundaries. Moreover, C2 information must be provided to the strategic levels of command including national organisations. Additionally, NATO forces must interact with non-NATO nations, non-governmental bodies, and international and national aid organisations.

The Military Committee approved MC 245 on 18 June 1976, and the North Atlantic Council later noted this on 6 August 1976 (PO/76/87). MC 245 was a statement of the military requirement for interoperability between automated data systems. This visionary statement remains valid today. It led to the start of the ATCCIS programme in 1980.

### **Army Tactical Command and Control Information System (ATCCIS)**

The objective was (and still remains) to see if interoperability can be obtained at reduced cost and developed according to technical standards agreed by Nations and prescribed by NATO. The aim given to the programme was to identify the minimum set of specifications, to be included within C2 systems, to allow interoperability between national C2 systems. The programme has gone through the stages of: operational analysis, technical concepts, proof of concept, transition to operational use, demonstration, and maturing of the specification. The ATCCIS programme is not a formal NATO programme. Rather it is a voluntary and independent activity by the participating nations and is sponsored by SHAPE. The nations and HQs that are active in the ATCCIS programme are: Belgium, Canada, Czech Republic, Denmark, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Spain, Turkey, United Kingdom, United States, Regional Headquarters Allied Forces North Europe (RHQ AFNORTH) and Supreme Headquarters Allied Powers Europe (SHAPE).

The ATCCIS specification is a managed interface between C2 information systems. When incorporated into a system it enables interoperability of information between any other system that also incorporates the specification. Battlespace data is transferred as information. The meaning and context of the information is preserved across national and system boundaries precisely and without any ambiguity.

The information exchange requirements, upon which ATCCIS is founded, encompass the spectrum of Joint and Combined Land Operations. Thus ATCCIS meets the requirements of the Land Component Commander of Allied Joint and Combined Operations (including Article 5 and Crisis Response Operations). Systems may be wholly different from each other and need not necessarily conform to any hardware or software standard. Typically systems will be acquired through national or NATO acquisition

programmes and their architecture will conform to the national or NATO policy prevailing at the time.

In a community of ATCCIS-enabled C2 systems nations, command levels and organisations can share:

- Situational awareness
- Orders, plans and intentions
- Capabilities and status of friendly and enemy forces.

### **Concept**

The ATCCIS specifications consist of two main components: a data model and a replication mechanism. The Land C2 Information Exchange Data Model, LC2IEDM, is the fundamental product. It is a product of the analysis of a wide spectrum of allied information exchange requirements by 16 nations. It models the information that allied land component commanders need to exchange (both vertically and horizontally). It serves as the common interface specification for the exchange of essential battlespace information. The function, implementation and the display of the host C2 application is not the concern of ATCCIS. System developers incorporate the ATCCIS specification and include a single interface to it. Thereafter no further interfaces are required to interoperate with any other ATCCIS enabled system. The LC2IEDM is in its 5th generation (version 5). The previous version, LC2IEDM v2, is the core of the NATO Reference Model and is also a view model of NATO Corporate Data Model (STANAG 5523 / AdatP-32). The LC2IEDM v5 is offered to the NATO Data Administration Group as a revision to the view model.

The ATCCIS Replication Mechanism, the ARM, is complementary to the LC2IEDM data model. When a C2 application changes the state of information that it holds, and which is recognised by the ATCCIS specification, this information is automatically replicated to all other co-operating systems that have agreed to exchange this information. The meaning and context of the information is preserved and requires no additional processing on receipt to make it useful. System managers are able to decide to whom information flows, when and over what communications medium. It should be noted that communication protocols and communication systems are not part of ATCCIS, since the transfer facility employs agreed international standards. Currently, X.400, X.25, and TCP/IP are included within the specification.

The ATCCIS specifications enable interoperability at Degree 3 and functions at NATO Level 5 of System Interconnection<sup>2</sup>.

### ATCCIS Programme

The ATCCIS work has been conducted in programmed “Phases,” each with a specific aim:

- **Phase I** (1980-1983) was an initial “Feasibility Study” into the ATCCIS concept.
- **Phase II** (1985-1990) identified the military and technical concepts required to achieve C2 interoperability by the automatic exchange of data.
- **Phase III** (1992-1997) was the “proof of concept” phase. Phase III concluded with a successful demonstration of multinational C2 interoperability between national prototypes for ATCCIS-compliant systems. Interoperability by controlled, automatic data exchange, free of the need for common hardware, software, operating system, or database management system (DBMS) was demonstrated.
- **Phase IV** (1997-1999) concentrated on the refinement of the specifications and transition to operational use. CA, DA, FR, IT, GE, NL, NO, PO, SP, UK, and US were participants in the supporting programme of work. Phase IV included a Command Post Exercise involving nine national ATCCIS-compliant systems. Results from the Command Post Exercise concluded that ATCCIS was a workable solution for C2 interoperability that was achievable using the ATCCIS specifications.
- **Phase V** (2000-2002), known as “**ATCCIS 2000**,” had the aim of completing and maturing the ATCCIS specifications, suitable for building fieldable systems. The programme concentrated on extending the ATCCIS specifications to support “combined joint task forces” and “crisis response operations.” Further, the work included developing the necessary procedures to adopt and maintain all ATCCIS components as NATO standards.

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<sup>1</sup> *The NATO Policy for C3 Interoperability* [NC3B Sub-Committee AC/322 SC/2-WP/72 (Revised) Version 4.3]: “Seamless sharing of data that involves the automated sharing of data amongst systems based on a common exchange model.”

<sup>2</sup> STANAG 5048 - *The Minimum Scale of Connectivity for Communications and Information Systems for NATO Land Forces* (Edition 5. Promulgated 16 February 2000 by NC3B Sub-Committee AC/322 SC/1). “Two systems which are open to each other, and which conform to minimum standards for information definition and transfer such that there are no fixed constraints on the extent of access by users of one system to the other, but dynamic constraints are applied to each system, in accordance with the current operational situation, such that only a user-defined subset of the total information base of one system is available to the other.”

**Future**

The ATCCIS programme merged with the Multilateral Interoperability Programme (MIP) in early 2002. The ATCCIS ethos was passed to the enlarged MIP and MIP has taken the responsibility of keeping and further developing the ATCCIS specifications. The nations and HQs that are active in the enlarged MIP programme are: Australia, Belgium, Canada, Czech Republic, Denmark, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, SHAPE, Spain, Turkey, United Kingdom, and United States. In addition Austria, Hungary, Bulgaria and RHQ AFNORTH are expected to join; and Switzerland, Finland, Lithuania, Sweden, NATO Consultation, Command, and Control Agency (NC3A), NATO HQ Consultation, Command, and Control (C3) Staff and NATO Data Administration Organisation Staff have expressed interest.

These nations wish to achieve international interoperability of Command and Control Information Systems (C2IS) at all levels from corps to battalion, or lowest appropriate level, in order to support multinational (including NATO), combined and joint operations and the advancement of digitization in the international arena. The enlarged MIP will build, in an evolutionary way, on the baseline of interoperability already provided by the MIP and ATCCIS products.



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## **1. INTRODUCTION**

### **1.1 Overview**

1.1.1 This paper is a compendium of work produced by the Data Group during ATCCIS 2000 Phase V. The paper contains material that does not readily fit within the scope of other 5-series papers. Some of the material was used in support of ATCCIS specification development; some of the material constitutes proposals that were not accepted; still other material deals with original ideas about topics that the ATCCIS community must yet face.

1.1.2 The purpose is to preserve the work that has been done to date for use or reference in the future. The treatment of the topics that are covered in this paper may serve as a starting point or basis for future development of ATCCIS specifications.

### **1.2 Contents of the Paper**

Chapter 2 describes the methodology for IER evaluation. Chapter 3 documents the status of all the Change Proposals considered by the Data Group during this Phase. Chapter 4 documents Change Proposals and Ideas that should form the basis for future work.

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## 2. METHODOLOGY FOR IER EVALUATION

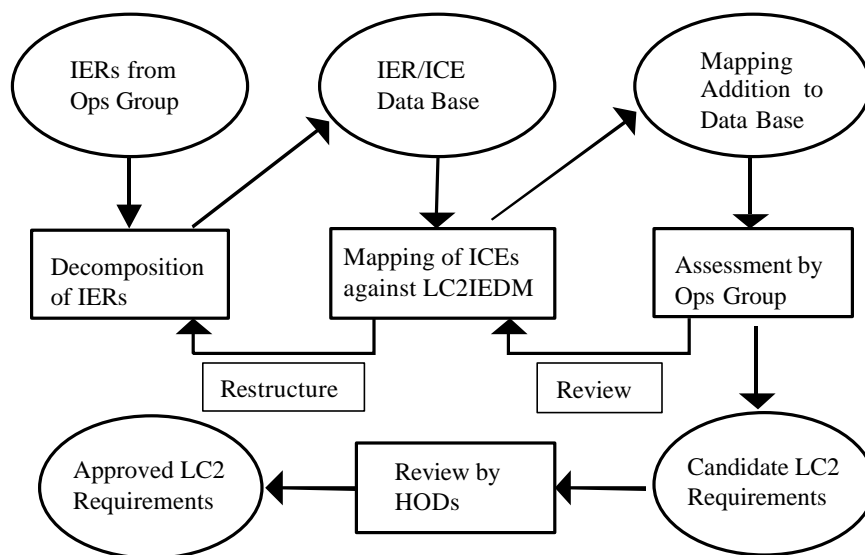
### 2.1 Introduction

The purpose of this chapter is to describe the methodology for dealing with the Information Exchange Requirements (IERs). This chapter seeks to describe:

- The overall process of evaluation, review, and approval of military requirements that need to be incorporated into the Land Command and Control Information Exchange Data Model (LC2IEDM)
- The schema for storing the detailed specification of requirements
- The schema for storing the results of separate evaluations by the Data and the Operational Groups.

### 2.2 The Evaluation Process

The process of evaluating IERs is illustrated in Figure 1. Ovals represent data, while the rectangles denote activities. Arrows indicate the data inputs that are needed for an activity and the data outputs that result from such an activity. This is an iterative process as represented by the two arrows that point from a given activity to a previous activity.



**Figure 1. IER Evaluation Process**

The first activity – a responsibility of the Data Group – is to decompose, as necessary, the applicable parts of the self-contained IERs into smaller and more manageable pieces. The pieces are referred to as Information Content Elements (ICEs) and are stored in a database.

The next step is to map each ICE against LC2IEDM. This activity results in a Mapped IER/ICE Data Base. The evaluation that is done at this stage may indicate

problems in the way some of the ICEs were defined; the ICEs may be restructured to represent the semantic context better.

These databases are then passed to the Operational Group for its assessment. The primary goal of the assessment is to look at the detailed requirements (ICEs) that cannot be satisfied by the current version of the data model and to re-assess each one as a requirement for further model development. The assessments by the Operational Group are returned to the Data Group to assure that there is agreement between the two groups. Once full resolution has been reached, the set of ICEs that cannot be satisfied by the LC2IEDM data model and that are affirmed as requirements by the Operational Group drive modelling development.

## 2.3 Storage of Requirements Data

### 2.3.1 Introduction

This section describes the details of the schema for storing all of the data for the evaluation process. The primary storage schema is the IER Evaluation Data Base whose logical design is based on the IER Evaluation Data Model. The model itself is presented in three parts for ease of exposition. The first part describes the storage and decomposition of IERs. This includes the administrative data about the IERs themselves, as well as the detailed data about the substantive information exchange requirements. The second part touches upon a classification of the requirements according to subject areas. The third part describes the storage of (a) requirements mapping against the LC2IEDM data model and (b) the assessments made by the Operational Group.

### 2.3.2 IER Decomposition

Many of the individual IERs contain multiple discrete elements of information, each requiring review and commentary. It is necessary to identify and store the individual elements for subsequent evaluation. The design is shown in Figure 2. The various features of the model are described in the paragraphs below.

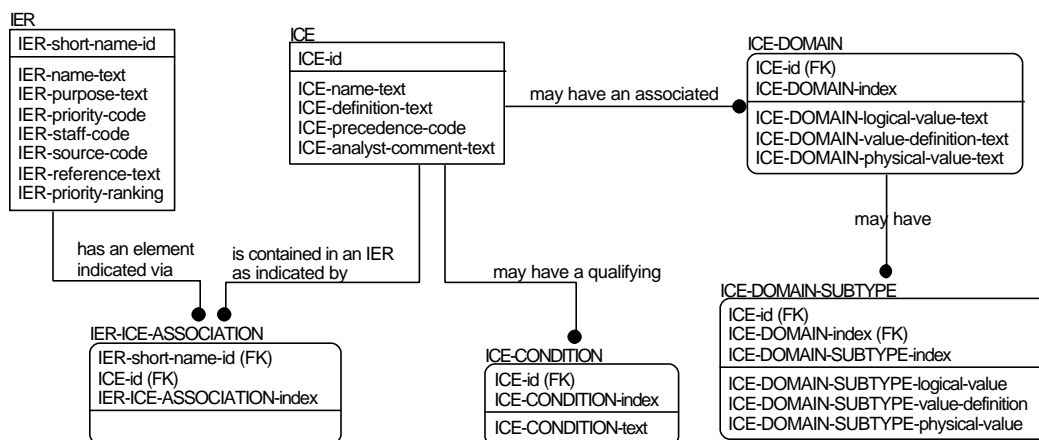


Figure 2. Requirements Decomposition

### **2.3.2.1 IER Description**

The basic administrative description of an IER is stored in the table IER. The purpose is to provide traceability from the comprehensive form of requirements provided by the Operational Users Working Group and the more detailed elements that are actually evaluated by the Data Group.<sup>3</sup>

### **2.3.2.2 Description of Information Content Element (ICE)**

Information Content Element (ICE) is a modular part of an IER. Ideally, it should be an atomic piece of information. More likely, an ICE has multiple concepts imbedded within it. In any case, ICE is a key element of the methodology and is the primary level at which its equivalence with the LC2IEDM data model is evaluated. Data that is entered into the database is an exact or a slightly modified copy of the statements found in an IER. Occasionally, a small modification is necessary to correct typographical errors or omissions in the original.

The process of deriving ICEs from the IERs is somewhat subjective with respect to the degree of decomposition. The decomposition should be as deep as possible, but it has to be balanced against loss of context. A useful technique for achieving decomposition is to include a suitable general comment from the IER for context and then pointing to the specific elements of data that are to be evaluated.

The process of decomposing each individual IER into its component parts results in the creation of multiple ICEs 2.3.2.4 with apparently the same or similar content. The degree of actual redundancy between ICEs can only be established after each ICE is evaluated, taking into account the full context of the IER. The redundancies are identified explicitly after evaluations are completed, as explained in a subsequent section.

### **2.3.2.3 Linking ICE with IER**

The identification of an ICE with an IER is recorded in the table IER-ICE-ASSOCIATION. Thus, it is possible to determine for a given IER all the associated ICEs.

### **2.3.2.4 Adding Domains**

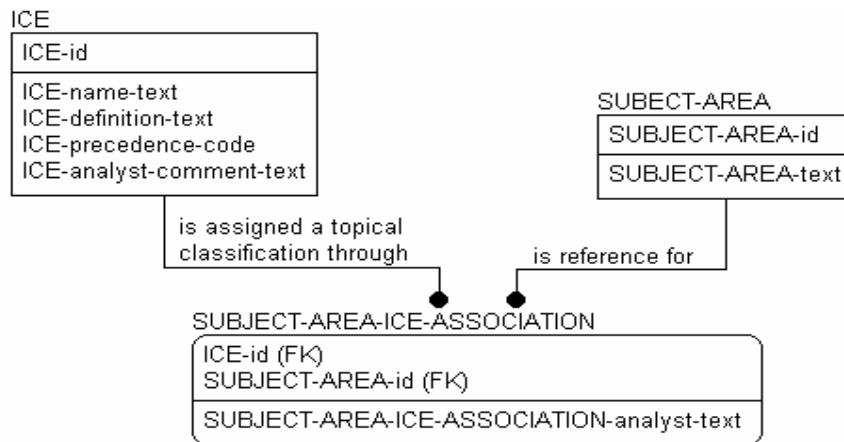
The table ICE-DOMAIN permits the entry of the domain values for a given ICE; the availability of domain data enables a more precise evaluation of the ICEs against model functionality. Some of the domain values have their own sub-domains; the entity ICE-DOMAIN-SUBTYPE permits the inclusion of these domains.

## **2.4 Classifying by Subject Area**

The evaluation model embodies a capability to assign each ICE to one or more subject areas. The structure for this is illustrated in Figure 3. The list of subjects is contained in the table SUBJECT-AREA. The linkage to ICEs is made through the entity SUBJECT-AREA-ICE-ASSOCIATION.

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<sup>3</sup> The definitions of entities (tables) and attributes (fields) for the IER Evaluation Data Model are presented in Sections 2.8.2 and 2.8.3, respectively.



**Figure 3. Classification of ICE According to Subject Area**

This functionality was introduced with the intention of managing the process of mapping. The primary purpose is to assign to each ICE one or more subject labels. Then the subject areas can be used in dividing the work into coherent topics that may be assigned to nations or individuals who are assessing the required information elements against the data structures. The appropriate values for subject areas are listed in the table below.

Organisation	Activity
Organisation associations	Other
Dates and times	Capability
Organisation and task associations	Objects
Location	Candidate target
Rules of engagement (ROE)	Facility/Installation
Materiel	Person
Control features	Geographic feature
Holdings	Medical
Status of items	Weather
NBC defensive	Communications

## 2.5 Mapping of IERs against LC2IEDM Data Model

### 2.5.1 Introduction

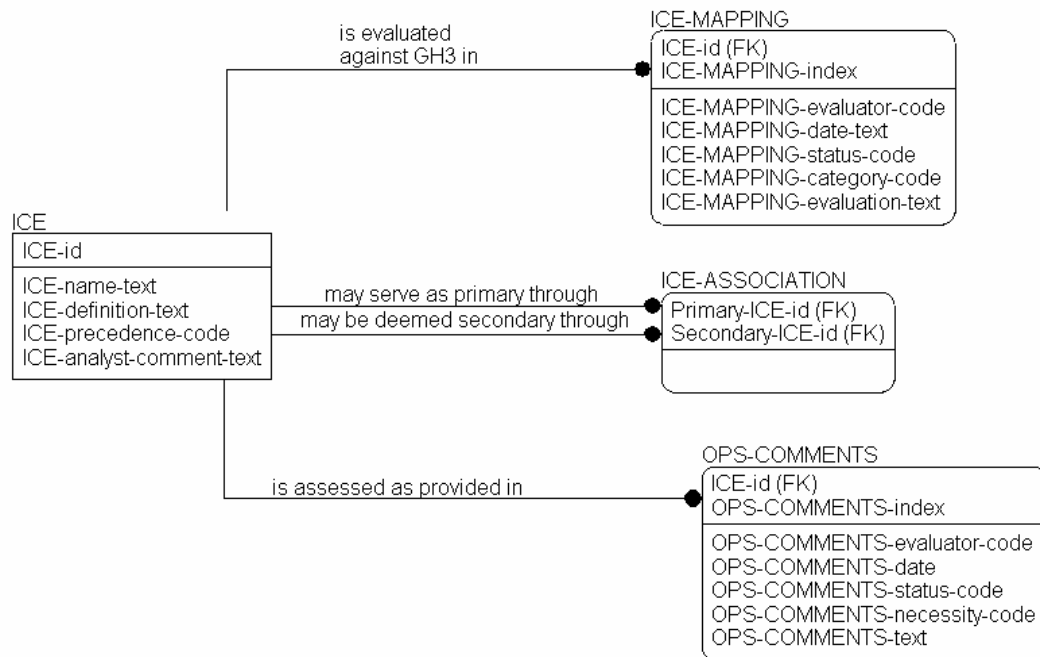
The part of the IER Evaluation Data Model that deals with the mapping and evaluation of requirements is illustrated in Figure 4. It provides a place for three types of assessments:

- The mapping by the Data Group of ICEs against the LC2IEDM data model in ICE-MAPPING.
- The identification of ICEs with identical or nearly identical data content in ICE-ASSOCIATION.



- c) The reviews by the Operational Group of the requirements at the ICE level after the mappings have been completed.

The explanations of the processes are presented in the sections that follow.



**Figure 4. Requirements Mapping View**

### 2.5.2 Mapping to LC2IEDM Data Structure

The table ICE-MAPPING is intended to record both the administrative and substantive information about the mapping. The administrative information includes the identification of the evaluator, the status, and the date at which a particular status holds. The evaluators may be individuals, countries, or teams. The status codes are *assigned*, *proposed*, *reviewed*, and *approved*. The meaning of the codes is provided in the table below:

Status Code	Meaning
Assigned	An evaluator has been named for the ICE with responsibility for its evaluation.
Proposed	An evaluator has completed the evaluation; the evaluation is ready for group review.
Reviewed	The Data Group has examined the evaluation but has not accepted it and deems that additional work is required.
Approved	The Data Group has completed its deliberations and agrees that the evaluation is acceptable.

The substantive part of the evaluation assigns a category code that designates the relationship of an ICE to the LC2IEDM data model. The following set of values have been adopted:

Category Code	Meaning
Complete	The data identified by ICE definition can be accommodated within the GH3 specification.
Partial – Domain Value(s) Needed	The type of data identified by ICE definition can be accommodated within the GH3 specification, but additional domain values are or may be needed for full equivalence.
Partial – Attribute(s) Needed	Some of the data identified by ICE definition can be accommodated within the GH3 specification but one or more attributes need to be added for complete equivalence.
Partial – Structure Needed	Some of the data identified by ICE definition can be accommodated within the GH3 specification but additional structure is needed in the form of additional entities and relationships for complete equivalence.
None – Structure Needed	The data identified by ICE definition cannot be accommodated within the GH3 specification without adding structure in the form of additional entities and relationships.
Derived – Complete	The underlying data identified by ICE definition can be accommodated within the GH3 specification, but the specific form of information required by the ICE needs to be extracted at the application level.
Derived – Partial	Part of the underlying data identified by ICE definition can be accommodated within the GH3 specification, but the specific form of information required by the ICE needs to be extracted at the application level.
Clarification Needed	The ICE definition is either ambiguous or contains references to undefined acronyms or abbreviations that cannot be deciphered by the analysts. The category may also include a question about the ICE as a requirement. A further explanation is being requested from the Operational Group before the mapping evaluation can be completed.
Not Applicable	The type of data identified in the ICE definition is not appropriate for the GH3 specification. It generally deals with data that applies to the structure or administration of the underlying IER as a formatted message.
Requirement Withdrawn	An initial requirement put forth by the Operational Group has been withdrawn from further consideration.

The description of the way in which LC2IEDM data structures need to be used in order to satisfy an ICE completely or partially is contained in the field *ICE-MAPPING-evaluation-text*. It is highly desirable in cases of partial mapping that the text clearly describes the nature of the mismatch between the ICE and LC2IEDM. If the description is particularly involved, the field may contain a reference to a document file containing the full description. This is a mandatory entry for complete or partial mapping. No commentary need be provided in case an ICE is deemed to be inapplicable or have no mapping to LC2IEDM data model; however, some form of justification is desired.

The classification of *derived* is included to account for a number of ICEs that specify explicitly the type of information that would be available using the LC2IEDM schema, but it would have to be extracted or brought together at the application level. The prime examples are certain summaries that re-state in a different form information that is already stored in the database.

### 2.5.3 Rationalisation of Information Content Elements (ICEs)

Once the evaluation of ICEs has been completed, it is possible to identify redundancy among ICEs. The mechanism for indicating that an ICE has been chosen as the representative of a class of similar ICEs involves two entities: ICE and ICE-ASSOCIATION. The ICE that is chosen to be the representative for its equivalence class is given the value “Primary” in the *ICE-precedence-code*. The other members of the class receive the value “Secondary.” The members of the equivalence class are identified through the ICE-ASSOCIATION table in which every secondary ICE is linked to the primary ICE.

The analyst is cautioned to be conservative in setting up an equivalence class among ICEs. If there is any question about the equivalence, then it is better not to include

the ICE in question. The same caution should be exercised in the other direction. For example, if an ICE cites “date-time-group” or DTG in its definition, it does not mean that the substantive informational content is truly the designation of dates and times. The real meaning may be in how the DTG is being used.

## 2.6 Operational Evaluation

The results of the mapping are maintained in MS Access databases. The completed databases are returned to the Operational Group for additional assessments.

The table OPS-COMMENTS is intended to record both the administrative and substantive information about an evaluation, similarly to that used in the mapping. The administrative information includes the identification of the evaluator, the status, and the date at which a particular status holds. The substantive part of the evaluation assigns a category code that designates the necessity of incorporating ICE data in the LC2IEDM data model and provides a text to explain the categorisation. The following set of values have been adopted for OPS-COMMENTS-necessity-code:

Category Code	Meaning
Essential	The Generic Hub data specification must be changed to accommodate the data identified by the ICE definition.
Desirable	The Generic Hub data specification should be changed to accommodate the data identified by the ICE definition.
Not Required	The Generic Hub data specification need not be changed to accommodate the data identified by the ICE definition.

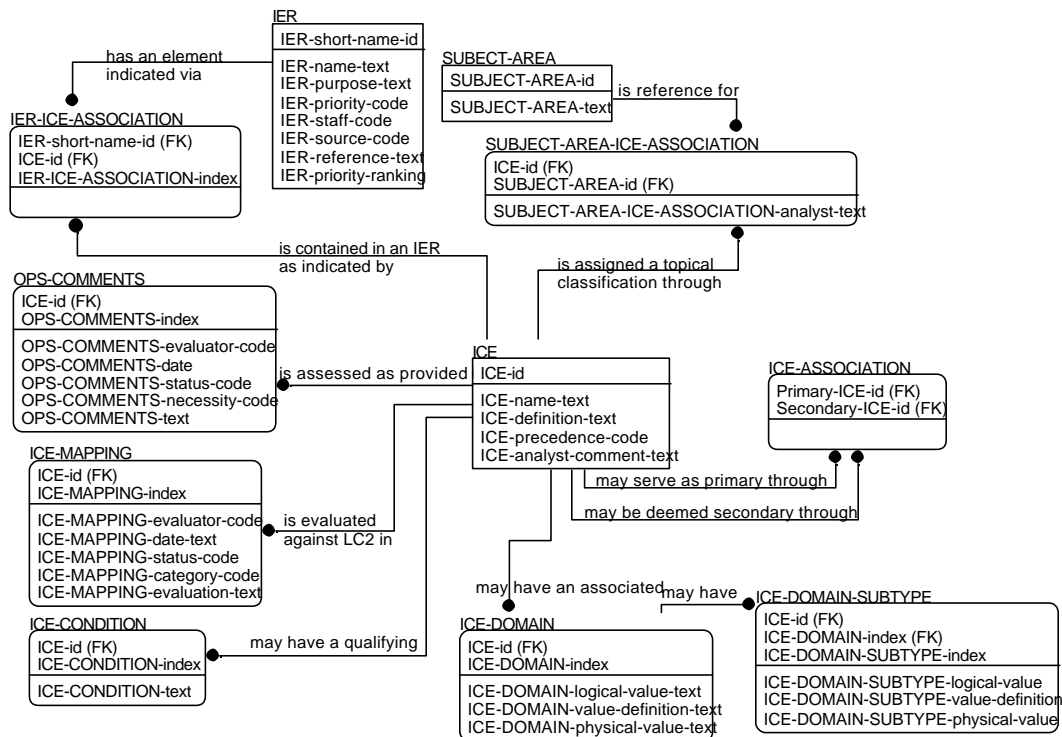
The categorisation of an ICE as having a complete mapping requires no further action on the part of the Data Group. One of the outcomes during ICE evaluation may be a request for clarification of a particular element; it is particularly important for the Operational Group to either (a) provide the requested explanation or data or (b) designate the ICE as not required for further model development.

A demanding case is a review of ICEs that have been assigned a category of partial mapping. In this case, the operational users will need to review the requirements at the ICE level and decide which of the partially mapped elements are truly required. Those that are deemed to be confirmed requirements must be worked into the evolution of the Generic Hub data model; the others can be set aside.

## 2.7 IER Evaluation Data Model

This section contains the technical specification of the entire data model for evaluation and entity and attribute definitions.

## 2.7.1 Data Model for IER Evaluation



## 2.7.2 Entity Definitions

Entity Name	Entity Definition
ICE	A statement of information specification drawn from an IER Section 5 and referred to as information content element (ICE).
ICE-ASSOCIATION	The relationship between a specific ICE as primary and another specific ICE as secondary. Note: The intent is to indicate that the secondary ICE is semantically equivalent to the primary ICE.
ICE-DOMAIN	A description of one of an enumerated set of values that may be associated with an ICE. Note: The entity permits the storage of domain values that are identified in APP-9 or other specifications of IERs.
ICE-DOMAIN-SUBTYPE	A description of a set of values that is associated with a specific logical value in ICE-DOMAIN.
ICE-MAPPING	The classification of the degree to which the semantic meaning of a specific ICE can be satisfied by the data structures specified in the GH3 Data Model Edition 2.0.
IER	The identification of APP-9 and STANAG specifications as an information exchange requirement (IER) for ATCCIS-conformant systems.
IER-ICE-ASSOCIATION	The relationship between a specific IER and a specific ICE. Note: This permits the identification of all ICEs associated with a single IER and the linking of a common ICE to more than one IER.
OPS-COMMENTS	The assessment of a specific ICE as to its criticality in the ATCCIS specification for information exchange.
SUBJECT-AREA	An operationally meaningful functional category for the purpose of classifying related information elements.
SUBJECT-AREA-ICE-ASSOCIATION	The relationship between a specific SUBJECTAREA and a specific ICE. Note: This entity permits a coherent grouping of related ICEs.

### 2.7.3 Attribute Definitions

Attribute Name	Attribute Definition
ICE-DOMAIN-SUBTYPE-index	The unique value assigned to represent a specific ICE-DOMAIN -SUBTYPE for a specific ICE-DOMAIN and to distinguish it from all other ICE-DOMAIN -SUBTYPEs for that ICE-DOMAIN.
ICE-DOMAIN-SUBTYPE-logical-value	The statement of a logical value for a specific ICE-DOMAIN -SUBTYPE and a specific index.
ICE-DOMAIN-SUBTYPE-physical-value	The statement of a physical value for a specific ICE-DOMAIN -SUBTYPE and a specific index.
ICE-DOMAIN-SUBTYPE-value-definition	The definition of a domain value for a specific ICE-DOMAIN -SUBTYPE and a specific index.
ICE-DOMAIN-index	The unique value assigned to represent a specific ICE-DOMAIN for a specific ICE and to distinguish it from all other ICE-DOMAINS for that ICE.
ICE-DOMAIN-logical-value-text	The statement of a logical value for a specific ICE-DOMAIN and a specific index.
ICE-DOMAIN-physical-value-text	The statement of a physical value for a specific ICE-DOMAIN and a specific index.
ICE-DOMAIN-value-definition-text	The definition of a domain value for a specific ICE-DOMAIN and a specific index.
ICE-MAPPING-category-code	The specific value that represents the evaluator's classification of the mapping with respect to GH3.
ICE-MAPPING-date-text	The date at which a specific ICE-MAPPING has reached a particular status.
ICE-MAPPING-evaluation-text	A description of the degree of semantic equivalence to GH3 for a specific ICE-MAPPING. Note: If the description is lengthy and involves diagrams and other content that cannot be included directly in the data base, then a reference to a specific Microsoft Word 7 file should be included.
ICE-MAPPING-evaluator-code	The specific value that represents the evaluator of the specific ICE-MAPPING. The values may be stated in terms of a nation, team, or individual.
ICE-MAPPING-index	The unique value assigned to represent a specific ICE-MAPPING for a specific ICE and to distinguish it from all other ICE-MAPPINGS for that ICE.
ICE-MAPPING-status-code	The specific value that represents the processing status of an ICE-MAPPING. The sample values are: Assigned, Proposed, Reviewed, Approved.
ICE-analyst-comment-text	Analyst's amplifying explanations regarding the specific ICE. The comments may touch upon topics such as unusual problems in structuring an ICE from the source, particular interpretations made by the analyst, preliminary categorisation of ICE with respect to GH3 mapping, and possibly an indication of the nature of the mapping.
ICE-definition-text	The description of a specific ICE. In case of APP-9, the definition is drawn from the elements contained in paragraph 5.1.
ICE-id	The unique value assigned to represent a specific ICE and to distinguish it from all other ICEs.
ICE-name-text	A designation of a specific ICE. In case of APP-9, the name is drawn from the elements described in paragraph 5.1.
ICE-precedence-code	The classification of a specific ICE as being primary or secondary for the purpose of grouping ICEs that have identical or nearly identical semantic content.
IER-ICE-ASSOCIATION-index	A number for the purpose of sequencing the ICE to correspond to the order specified in the IER.
IER-name-text	A descriptive title of a specific IER.
IER-priority-code	The priority assigned to a specific IER by the ATCCIS Operational Group.
IER-priority-ranking	The specification of relative ranking of the specific IER among all IERs for a given IER-priority-code.
IER-purpose-text	A statement of purpose for a specific IER. In case of IERs based on APP-9, it is paragraph 3.
IER-reference-text	A detailed identification of the source of the IER. In case of APP-9, it is paragraph 1.2.
IER-short-name-id	The unique set of characters assigned to represent a specific IER and to distinguish it from all other IERs.
IER-source-code	The identification of specific projects or documents that serve as bases for the requirements.
IER-staff-code	The designation of a staff section as having a primary interest in the specific IER.
OPS-COMMENTS-necessity-code	The specific value that denotes the degree to which the ATCCIS data structures must accommodate a specific ICE. The sample values are: Mandatory, Desirable, Not required.
OPS-COMMENTS-date	The date at which a specific OPS-COMMENTS has reached a particular status.

Attribute Name	Attribute Definition
OPS-COMMENTS-evaluator-code	The specific value that represents the assessor of the specific OPS-COMMENTS. The values may be stated in terms of a nation, team, or individual.
OPS-COMMENTS-index	The unique value assigned to represent a specific OPS-COMMENTS for a specific ICE and to distinguish it from all other OPS-COMMENTS for that ICE.
OPS-COMMENTS-status-code	The specific value that represents the processing status of an OPS-COMMENTS. The sample values are: Assigned, Proposed, Reviewed, Approved.
OPS-COMMENTS-text	An explanatory or amplifying commentary about the relationship of a specific ICE with respect to ATCCIS specification.
SUBJECT-AREA-ICE-ASSOCIATION-analyst-text	Commentary, as needed, by an analyst.
SUBJECT-AREA-id	The unique set of characters assigned to represent a specific SUBJECT-AREA and to distinguish it from all other SUBJECT-AREAs.
SUBJECT-AREA-text	A brief description of a specific SUBJECT-AREA.

### 3. REQUIREMENTS

The purpose of this chapter is to describe three sets of Information Exchange Requirements (IERs) that governed the evolution of the data model during Phases IV and V. In Phase IV the Operational Working Group prescribed the Article V requirements that are mainly based on APP-9 specifications. During Phase V 14 IERs were provided to support Crisis Response Operations (CRO) and a limited set of 18 IERs to support Combined Joint Task Force (CJTF) operations. The requirements are stored as ICEs in three IER/ICE Data Bases: one each for Article V, CRO and CJTF requirements.<sup>4</sup>

#### 3.1 Phase IV

IERs for Phase IV were produced by the newly formed Operational Group at the first meeting<sup>5</sup>. The initial set selected by the Operational Group is listed in Table 1. IERs are grouped according to staff function under column heading "Domain." The last column in the table corresponds to the tracking number assigned by the Data Group and is used in a subsequent table.

**Table 1. Initial Minimum Set of Essential Article V IERs**

Domain	Abbreviation	Short title	Source	No
G2	FIRST HOSTILE ACT	First Hostile Act	APP9	16
	INTREP	Intelligence Report	APP9	21
	INTREQ	Intelligence Request	APP9	22
	INTSUM	Intelligence Summary	APP9	23
	LANDINTREP	Land intelligence Report	APP9	25
	ENSITREP	Enemy situation report	APP9	14
G3	PRESENCE	Presence	APP9	39
	OWNSITREP	Own Land Force Situation report	APP9	37
	ROEREQ	Rule of engagement request	APP9	42
	ROEIMPL	Rule of engagement implementation	APP9	41
	ASSESSREP	Commander's assessment	APP9	6
	NBCCDR	NBC Chemical Downwind Report	APP9	33
	NBCEDR	NBC Effective Downwind Report	APP9	34
	NBC1	NBC 1	APP9	31
	NBC3	NBC 3	APP9	32
	OPO Std 2014	Operational Order	STANAG 2014	
	OPLAN	Operational Plan	STANAG 2014	
	FRAGO	Fragmentary order	APP9	18

<sup>4</sup> The databases are maintained in Microsoft Access™ format. It may be found on the ATCCIS CD-ROM maintained by the ATCCIS Configuration Control Manager at SHAPE, Mons, Belgium.

<sup>5</sup> ATCCIS meeting AWG IV-1 in September 1997 at Ede, The Netherlands.

Domain	Abbreviation	Short title	Source	No
G4	LOGSITLAND	Logistic Situation Report Land Forces	APP9	27
	LOGASSESSREP	Logistic Assessrep Report	APP9	26
	CASAVACREQ	Casualty Evacuation request	APP9	8
G1	PERSREP	Personnel report	APP9	38
	MEDASSESSREP	Medical assessment report	APP9	28
	MEDSITREP	Medical Situation report	APP9	29
Fire Support	NNFP.FP	Non-Nuclear Fire Planning. FP	APP9	35
	FMR.FMC	Fire Mission Report. Fire mission Command	APP9	17
	AFU.FUS	Artillery Fire Unit Fire Unit Status	APP9	3
Engineer Support	BARREP	Barrier Report	APP9	7
	OBSREP	Obstacle Report	APP9	36
	DMLORD	Reserved Demolition Order	APP9	13
	SCATMINWARN	Scatterable Minefield Warning	APP9	47
	SCATMINREQ	Scatterable Minefield Request	APP9	46
	SCATMINREP	Scatterable Minefield Report	APP9	45
Air Defence	WCO	Weapons Control Order	APP9	48
	ADREP	Air Defence Report	APP9	2
Air OPS	ACO	Airspace Control Order	APP9	1
	AIRATTACKWARN	Air Attack Warning	APP9	4
	AIRREQ	Air Request	APP9	5
Helicopters	HELLSREP	Helicopter Landing site report	APP9	19
	HELQUEST	Helicopter Request	APP9	20
	JAATMSNO	Joint Air Attack Team Mission Order	APP9	24
G5	CMOSITREP	Civil/military Operation order	APP9	10
Electronic Warfare	MIJIWARNREP	Meaconing, Intrusion, Jammin, Interference Warning Report	APP9	30
	EWRTM	EW Request/Tasking Message	APP9	15
G6	CCISSTAREP	CCIS Status Report	APP9	9
	COMSITREP	Communications situation report	APP9	11
	RFREQREQ	Radio Frequency Request	APP9	40
	RRFREQREQ	Radio Frequency Request	APP9	43

The general principle is to make each ICE unique to an IER. An examination of IERs based on APP-9 revealed that a set of data elements was common to almost every IER. These included such items as Message name, Exercise identification: nickname, Operation codeword, Message identifier, Security, and Delivery instructions. In order to account for these without repeating each element about 50 times, an artificial IER – labelled COMMON – was created. The current Article V database (6 February 2002) contains 640 ICEs of which 12 are associated with COMMON. Linkage of the ICEs in COMMON to all other IERs is implicit, although it could be made explicit by suitable entries in IER-ICE-ASSOCIATION table.



### 3.2 Phase V

Work on Article V requirements continued during Phase V. In addition, the Operational Group issued an additional set of requirements at first referred to as Peacetime Support Operations (PSO), later changed to Military Operations Other Than War (MOOTW)<sup>6</sup>. The latter usage prevailed throughout the phase; however, near the end of the phase NATO adopted the expression Crisis Response Operations (CRO) in lieu of MOOTW.

CRO requirements are listed in Table 2 to indicate the general categories that are covered. Detailed elements are not shown because they are stored in an Access database and are difficult to summarise except in the form shown here. The Operational Group drew upon multiple sources to produce a set that is unique to the ATCCIS programme and is not documented elsewhere.

**Table 2. CRO Requirements**

<b>IER</b>
Arrest Report
Border Crossing
Camps
Civil Military Operations
Confiscated Equipment
EOD Incident
Holdings Parties
Host Nation Support
Incident Report
Mass Graves
Meteorology
Personnel Identification
PSYOPS
Refugees and Displaced Persons

The current CRO database contains 518 ICEs.

In recognition of changing realities of potential NATO military operations, ATCCIS Heads of Delegation enlarged the scope in Phase V by adding requirements for joint interfaces that are needed to support land operations. Formal requirements were issued<sup>7</sup> by the Operational Group and are listed in Table 3.

**Table 3. Joint Requirements**

<b>IER</b>
Airfield zone
Aviation areas

<sup>6</sup> Requirements were issued during AWG 2000-2 in September 2000 in Lisbon.

<sup>7</sup> Requirements were made available during AWG 2000-4 in March 2001 in Oslo.

Aviation route
Command and Control-Weapon points
Coordination Altitude
Forward Arming and Resupply Point
Maritime Operational Graphics
Close Air Support Resources
Close Air Support Status
Naval Gun Fire Resources
Naval Gun Fire Status
Airfield Facility
Air Plan - Airspace Control Order
Air Plan - Air Tasking Order
Harbour Facility
Order of Battle AIR
Order of Battle SEA
Unit Tactical Summary

The current CJTF database contains 222 ICEs.

### 3.3 Results of Model Evaluation against IERs

The results of evaluating the model for its ability to satisfy the data requirements of each IER are summarised in the table below. The evaluated ICEs were classified according to the categories shown in the top. The numbers in the central part of the table represent the number of ICEs that fall into each category for each IER. The right column lists the percentage of ICEs that the model satisfies for each IER. The grand totals are listed in the last row of the table. Referenced IER and ICE data can be found in the IER Data Base stored on the ATCCIS CD ROM.

Individual IERs from APP-9 cover relatively broad ranges of data since each IER is self-contained as a message. Each IER was decomposed by the Data Group into a set of smaller and more manageable pieces that are referred to as Information Content Elements (ICEs) and are stored in the IER/ICE Data Base. Table 4 lists the Article V IERs; ICE count for each IER is listed in the column "ICE Grand Total." The table provides an accounting of the disposition of requirements. The categories are as follows:

- Complete—Data identified in the ICE can be represented in the model or is derivable from the model. Derivable means that the underlying data identified by ICE definition can be accommodated within the model specification, but the specific form of information required by the ICE needs to be extracted at the application level.
- Incomplete—Data identified in the ICE cannot be fully represented in the model; modifications to the model may entail addition of domain values, new attributes or new entities.
- Clarification Needed—The ICE definition is either ambiguous or contains references to undefined acronyms or abbreviations that cannot be deciphered by the analysts.

The category may also include a question about the ICE as a requirement. A further explanation has been requested from the Operational Group before further work is done.

- d. Requirement Withdrawn—An initial requirement put forth by the Operational Group has been withdrawn from further consideration.
- e. Not Applicable—The type of data identified in the ICE definition is not appropriate for the data model specification. It generally deals with data that applies to the structure or administration of the underlying IER as a formatted message.

ICEs that are categorised as *Not Applicable* or *Requirement Withdrawn* are subtracted from the grand total. The result is labelled *Requirement Total* and it represents the basis for accounting the degree to which the model satisfies requirements. The basis ICEs then are assessed as *Complete*, *Incomplete*, or *Clarification Needed*. The column *Percentage Completed* expresses the ratio of *Complete* to *Requirement Total*.

**Table 4. Article V Requirements and Fulfillment in the Model**

No	IER	ICE Grand Total	Not Applicable	Requirement Withdrawn	Requirement Total	Complete	Incomplete	Clarification Needed	Percentage Complete
2	ADREP	6	1		5	5			100%
3	AFU.FUS	28	1	2	25	23	2		92%
4	AIRATTACKWARN	1			1	1			100%
5	AIRREQ	21	2	1	18	15	3		83%
6	ASSESSREP	13			13	13			100%
7	BARREP	13	3		10	10			100%
8	CASEVACREQ	7			7	6	1		86%
9	CCISSTATREP	13	1	2	10	8	2		80%
10	CMOSITREP	6			6	6			100%
11	COMSITREP	6	1		5	5			100%
12	COMMON	12	9		3	2	1		67%
13	DMLORD	16	3		13	13			100%
14	ENSITREP	24		2	22	21	1		95%
15	EWRTM	10	1	5	4	4			100%
16	FIRST HOSTILE ACT	8			8	7	1		88%
17	FMR.FMC	6	1	3	2	2			100%
18	FRAGO	29			29	29			100%
19	HELLSREP	22	1		21	20	1		95%
20	HELQUEST	11			11	10	1		91%

No	IER	ICE Grand Total	Not Applicable	Requirement Withdrawn	Requirement Total	Complete	Incomplete	Clarification Needed	Percentage Complete
21	INTREP	5	1	3	1	1			100%
22	INTREQ	29	2	2	25	23	2		92%
23	INTSUM	22	1	2	19	19			100%
24	JAATMSNO	31	3		28	28			100%
25	LANDINTREP	21		2	19	11	1		95%
26	LOGASSESSREP	4			4	4			100%
27	LOGSITLAND	10			10	10			100%
28	MEDASSESSREP	9		2	7	7			100%
29	MEDSITREP	14			14	14			100%
30	MIJIWARNREP	7			7	7			100%
31	NBC1	19	1	1	17	17			100%
32	NBC3	13	1		12	12			100%
33	NBCCDR	5	1		4	4			100%
34	NBCEDR	4	1		3	3			100%
35	NNFP.FP	31	3	4	24	23	1		96%
36	OBSREP	12	2		10	10			100%
37	OWNSITREP	23			23	23			100%
38	PERSREP	4			4	4			100%
39	PRESENCE	8		2	6	6			100%
40	RFREQREQ	14			14	6	2	6	43%
41	ROEIMPL	10	2		8	8			100%
42	ROERREQ	7			7	7			100%
43	RRFREQREQ	10			10	10			100%
44	SCATMINREC	16	2		14	14			100%
45	SCATMINREP	13	2		11	11			100%
46	SCATMINREQ	18	2		16	16			100%
47	SCATMINWARN	13	2		11	11			100%
48	WCO	8			8	8			100%
	<b>Grand Total</b>	<b>640</b>	<b>50</b>	<b>33</b>	<b>557</b>	<b>532</b>	<b>19</b>	<b>6</b>	<b>95%</b>

The CRO requirements are stored in the same database form as was the case for Article V. Table 5 accounts for the ICEs in the same way as the previous table with the

exception that there were no requirements deemed to be “Not Applicable” or “Withdrawn”.

**Table 5. CRO Requirements and Fulfillment in the Model**

No	IER	ICE Grand Total	Complete	Incomplete	Clarification Needed	Percentage Complete
1	Arrest Report	11	11			100%
2	Border Crossing	22	22			100%
3	Camps	26	17	8	1	65%
4	Civil Military Operations	47	46		1	98%
5	Confiscated Equipment	44	42	2		95%
6	EOD Incident	28	27		1	96%
7	Holdings Parties	37	35	2		95%
8	Host Nation Support	13	13			100%
9	Incident Report	183	163	17	3	89%
10	Mass Graves	16	16			100%
11	Meteorology	22	22			100%
12	Personnel Identification	36	34	2		94%
13	PSYOPS	24	22	2		92%
14	Refugees and Displaced Persons	9	9			100%
	<b>Grand Total</b>	<b>518</b>	<b>479</b>	<b>33</b>	<b>6</b>	<b>92%</b>

The CJTF requirements are stored in the same database form as was the case for CRO. Table 6 accounts for the CJTF ICEs in the same way as the previous table.

**Table 6. Joint Requirements and Fulfillment in the Model**

No	IER	Grand Total	Complete	Incomplete	Clarification Needed	Percentage Complete
1	Airfield zone	8	8			100%
2	Aviation areas	6	6			100%
3	Aviation route	10	10			100%
4	Command and Control-Weapon points	5	5			100%
5	Coordination Altitude	5	5			100%
6	Forward Arming and Resupply Point	6	6			100%
7	Maritime Operational Graphics	5	5			100%
8	Close Air Support Resources	7	7			100%
9	Close Air Support Status	5	5			100%
10	Naval Gun Fire Resources	7	7			100%
11	Naval Gun Fire Status	5	5			100%
12	Airfield Facility	15	14	1		93%
13	Air Plan - Airspace Control Order	62	56	6		90%
14	Air Plan - Air Tasking Order	28	28			100%
15	Harbour Facility	8	5	3		63%
16	Order of Battle AIR	15	15			100%
17	Order of Battle SEA	16	15		1	94%
18	Unit Tactical Summary	9	9			100%
	<b>Grand Total</b>	<b>222</b>	<b>211</b>	<b>10</b>	<b>1</b>	<b>95%</b>

## 4. CHANGE PROPOSALS

### 4.1 Introduction

The Data Group has processed a considerable number of change proposals during Phase V. A record of proposals and decisions that were reached are maintained as an Access database. The complete LC2IEDM\_CP\_Ed5.0\_20020318.mdb file is stored for reference on the ATCCIS CD-ROM that is maintained and produced by the ATCCIS Configuration Control Manager at SHAPE, Mons, Belgium.

### 4.2 Status of Change Proposals for Phase V

The proposals that were presented by the delegates during Phase V were considered. There are three categories reflecting the decisions that were made with respect to each proposal:

- a) Accepted. The proposals were incorporated into the specification of LC2IEDM Edition 5.0.
- b) Deferred. The proposals were postponed for consideration during the following phase taking into account the scope of expanded operational requirements.
- c) Withdrawn. The proposal was withdrawn by the submitter or was merged with an accepted CP.

A brief summary of each proposal is listed in Table 7 (Accepted), Table 8 (Deferred) or Table 9 (Withdrawn). It contains the tracking number, the working title, and a synopsis of the nature of the change.

**Table 7. Change Proposals – Accepted**

CP No	Title	Synopsis
<b>ATCCIS Working Group 2</b>		
35093	Location: Country–JFB039	The nationality codes used in ATCCIS (object-type-nationality-code) are compared with the codes used in STANAG 1059. The differences, with recommended actions are identified in the CP.
35107	NBC1 / GOLF (MM0026)	The purpose of NBC1 message is to standardise the method used to report and inform on NBC events. This report is specifically used to provide the observer's initial report giving basic data on a single nuclear, biological or chemical attack. The set GOLF, if used, provides suspected/observed means of delivery
35120	MM0325 Sector	There is a need to specify 'sector' in its very specific meaning in military terminology and in context with weapon control.
35152	OBSREP - Mines Presence (MM0220) and Obstacle Features (MM0221)	MM0220 requires a straightforward indication - YES/NO/NOT KNOWN - as to whether or not the obstacle encountered includes mines. MM0221 Defines the characteristics of each obstacle encountered, selected from the following categories: Prepared; Passable; Breached; Mines surface laid; Marked; Covered by enemy fire, and also provides details about the obstacle by type of mine if present, obstacle type and characteristics. Satisfaction of the requirements entails a modification of MINEFIELD by adding a new attribute and modifying the codes for an existing attribute, and adding domain values to facility-feature-association-category-code, control-feature-type-category-code, and control-feature-geographic-feature-association-category-code.
35170	ROE CD0001 – CD0026	The basic proposal is to add an entity to the current Rule of Engagement (ROE) structure to allow an organisation to request, authorize or cancel a Rule of Engagement.
35182	MM0694 Azimuth of fire	Specify the azimuth of fire measured in mils from grid north of the specified fire unit with legal entries from 0000 6399.

CP No	Title	Synopsis
35236	MM0405 HELLSREP	To provide the capability to express the method of deplanement in a Helicopter Landing Site Report (required codes: Land; Hover; Rope; Abseil or Winch).
35237	MM0406 HELLSREP	To provide the capability to express the classification of a land surface in terms of vehicles/helicopters that it can support.
35238	MM0408 HELLSREP	To provide the capability to express whether a land surface will recirculate as a result of a rotor downwash.
35247	MM0731 Target description – personal protection	Specify the general degree of personnel protection.
50207	REQUEST/HOLDINGS BUSINESS RULES	Current Chapter 10, Chapter 14 and Annex F specification for REQUEST (Intelligence Extension) and HOLDINGS have been reviewed. Recommendations for improvement are offered.
50208	Change to attribute name REFERENCE-identification -text	Definition for this attribute and the fact that it does not identify the REFERENCE supports a change of the name to REFERENCE-description-text.
50210	REPORTING-DATE-category-code	Definition for the domain (PLANNED) needs to be changed.
<b>ATCCIS Working Group 3</b>		
35142	LANDINTREP: Source accuracy and reliability - JFB027	For intelligence purpose (G2 domain), the information reliability and its source have to be evaluated. Source evaluation is defined as a general appraisal of the subject matter in graded terms to indicate the extent or degree to which it has been judged to be free from mistake or error or to conform to truth or some recognized standard value. The reliability evaluation is the general appraisal of the source in graded terms to indicate the extent to which it has been proven it can be counted on or trusted in to do as expected.
35147	ENSITREP / Force Weapons: LFRIL Code (JFC012) – ENSITREP / Ammunition On Hand: LFRIL Code (JFC018)	The proposal is to add an attribute in the MATERIEL-TYPE hierarchy and an associative entity between MATERIEL-TYPE and ORGANISATION.
35156	Air Stability	The LC2IEDM already has an attribute to deal with air stability: atmosphere-temperature-gradient-code. However there is a need to modify the definition of this attribute as well as the associated domain values and domain values definitions.
35161	MEDSITREP - IER-Medical Personnel	Provides the following details of medical personnel/capability available at the facility: 1. The number of surgical teams at the medical facility being reported 2. The number of available physicians, not posted to surgical teams, by the following specialities: Primary Care, Surgical, Anaesthetics, Internal Medicine, Radiology, Pathology, Orthopaedics, Head/Neck, Dentistry, Gynaecology, Psychology, Other.
35223	SCATMINREP - Stopping Power (MM0281)	Defines the general stopping power of the obstacle from: Low; Medium; High. From OPS Group – for anti-tank and anti-personnel mines.
35232	LANDINTREP: SOURCE - JFB028	The APP-9 LANDINTREP specifies the source classification of reported information. Current data model identifies the reporting organisation (reporting-data-reporting-organisation-id) but it does not provide the type of the source.
50201	APP-6A – LC2IEDM Equipment mapping	There is a need to make the LC2IEDM more consistent with the APP-6A specification. The equipment part of the APP-6A in general maps to the equipment-type-category-code/subcategory-code with a few exceptions (consumable-materiel-type-category-code/consumable-materiel-type-subcategory-code). LC2IEDM is aligned with APP-6A categories as much as possible.
50202	APP-6A – LC2IEDM Installation mapping	There is a need to make the LC2IEDM more consistent with the APP-6A specification. The installation part of the APP-6A in general maps to the facility-type-category-code/subcategory-code. LC2IEDM is aligned with APP-6A categories as much as possible.
50203	APP-6A – LC2IEDM mapping document	The proposal is to create a document which describes the current status of the mapping between the APP-6A and the LC2IEDM and to keep this document up-to-date whenever the APP-6A or LC2IEDM changes.
50209	Cannon/Gun/Howitzer	The definitions for these domains appear to overlap. Improved definitions are recommended.
50211	Obstacle gap	Research the definition for this domain in CTRL-FEAT-TYPE-cat-code, as it appears to contain 3 different concepts and make a recommendation for improvement.
<b>ATCCIS Working Group 4</b>		
35119	Military Aircraft types – CE16	Analysis of the Confiscated Equipment IER identifies a requirement to refer to types of aircraft in support of military operations other than war (MOOTW).
35335	APP-6A UNIT-TYPE Harmonisation	The proposed change is to completely revamp the UNIT-TYPE structure and to add two new subtypes to CAPABILITY.



CP No	Title	Synopsis
50204	Roadway	Addition of ROADWAY entity as a subtype of FACILITY
50217	OBJECT-TYPE category codes	Analysis of the OBJ-ITEM and OBJ-TYPE subtyping structure reveals that there is not a way to specify an OBJECT-ITEM and have it, in all cases, relate to its corresponding OBJECT-TYPE.
50218	POST-TYPE-category-code	The definitions for POST-TYPE-category-code need to be rewritten.
50301	ACTION-RESOURCE-EMPLOYMENT – reuse of action-id	The proposal is add a physical key because action-id appeared in the entity through two different logical relationships.
50302	SURFACE.surface-reference-point-id/centre_point_id	In the logical data model there exists an attribute called surface-reference-point-id. In the physical data model the corresponding column is named centre_point_id. One of them has to be renamed.
50303	Civilian Organisations – IER - Civil Military Operations	Analysis of the IERs in support of Military operations other than War (MOOTW) identifies a requirement to refer to types of Civilian organisations (non government) and groups of people.
50306	PSYOPS equipment - IER - Psychological Operations	Identify the PSYOPS unit(s) with location(s) and main type(s) of equipment held for use in psychological warfare operations
50403	Border Crossing - General - Situation	In Border Crossing IER, the action of border crossing takes place under different conditions. These conditions are specified as planned, not-planned, forced, illegal, escorted and surveilled. We need to be able to represent those conditions of border crossing in the data model.
50406	Border Crossing - Supplies -Quantity	The current domain values for consumable-materiel-type-issuing-unit-of-measure-code attribute does not fully cover all the supplies quantities mentioned in related IER.
50411	Personnel Identification -- Document	This proposal takes care of the following requirements from Personnel Identification: PI12, PI13, PI14, PI15, PI16, PI17, PI18, PI19, PI24, PI25, PI29. It involves addition of one new entity, and addition of four new attributes in PERSON.
50412	Personnel Identification -- Health	The current values of person-status-physical-status-code do only partly cover the requirement given in IER Personnel Identification.
50413	Personnel Identification	PSYOPS equipment - IER- Target audience
50414	Personnel Identification	The proposal is to replace our short list of religions with the complete list given in ADatP-3.
50415	LETTER-BOMB	Add the notion of letter bomb to satisfy MOOTW requirement in Explosive Ordnance Disposal Incident.
50416	Unexploded explosive ordnance (UXO)	Add the notion of UXO to satisfy MOOTW requirement in Explosive Ordnance Disposal Incident.
50419	MASSGRAVES-BOOBYTRAPS	Express the presence/absence of boobytraps in the grave reported, or if such a presence is not known.
50420	Camps - Running water/status – Medical support	There is a need to be able to express the amount of water and fuel that a camp can supply. This could be accomplished by adding two new domain values in "capability-category-code".
50421	Camps – occupation programs	This change proposal deals with different services for a camp. There is need for one new attribute in FACILITY-STATUS "facility-status-occupation-program-status-code" with new domain values, and several new domain values in "facility-type-category-code", "facility-status-operational-status-code" and "facility-status-operational-status-qualifier-code".
50423	Camps – General; Sustainment Agency - includes CA22 requirements	We need to be able to express who is responsible for the Sustainment Agency. This is done by adding domain value in "facility-type-category-code and in "organisation-facility-association".
50424	Confiscated Equipment	There is an operational requirement to be able identify the individual owner of a piece of materiel. It is solved by creating an association between PERSON and MATERIEL.
50426	DEMOLITION STATUS	There is a need to add new attributes Demolition_Status_Code to Facility Status, Geographic Status and Materiel Status sub-types.
50427	MILITARY LOAD CLASSIFICATION	The proposed changes would remove all MLC specific attributes across the model and replace them by 7 new capability subcategory codes.
50428	NBC Extension	The LC2IEDM does not have the required structure to handle NBC actions nor NBC materials. The CP extends the current structures. This CP will affect the following LC2IEDM structures: ACTION, MATERIAL-TYPE, METEOROLOGICAL-FEATURE, and CONTROL-FEATURE-TYPE.
50429	EQUIPMENT-TYPE restructuring	The following proposal is based upon a proposal written by Data Group for ATCCIS.

CP No	Title	Synopsis
50430	Attribute – Domain Fix	The definitions for category and subcategory codes contain extraneous words "or denotes". These definitions need rewritten. The domain definitions also contain an extra sentence describing the fact that the category code may be a discriminator. This is irrelevant to a domain definition and should be removed.
50431	ACTION-EVENT-category-code	Domain values to deal with nuclear bursts were added in a new entity NBC-EVENT.
50505	ASSOCIATION-STATUS entities fix	The xxx-ASSOCIATION-STATUS entities all contain the foreign key REPORTING-DATA-id as part of their key set. The decision was made to make the relationships from REPORTING-DATA to the xxx-ASSOCIATION-STATUS non-identifying and add a native-INDEX to those entities.
<b>ATCCIS Working Group 5</b>		
35088 - 35205 - 35206 - 35207 - 35208 - 35209 - 35210 - 35211	Casualty Accounting	APP-9 IERs MEDASSESSREP and MEDSITREP contain a number of requirements that deal with the matter of casualties such as arrivals, treatment, disposition, and backlog. The status of casualties must be accounted in several categories: medical cause, grouping by type, evacuation destination, and surgery triage. The proposed solution is to extend the FACILITY-STATUS structure by adding a subtype, three child entities, and three doubly associative entities. The proposed structure satisfies eight ICES. This proposal has been revised to replace data attributes that were used in the key in six entities and to replace them with indexes. The replaced attributes are moved into the data area.
35165	Total radiation dose	The requirement is for an optional attribute to describe the total absorbed dose code of organisation and persons.
35335	APP-6A UNIT-TYPE Harmonisation – Business Rules	The proposed change is to completely revamp the UNIT-TYPE structure and to add two new subtypes to CAPABILITY. Fixes Business rules for code attributes in the UNIT entity.
50206	ESTABLISHMENT	Using the establishment structure to create multi-level organisation hierarchy templates.
50305	Language skills/Capability - IER – Psychological Operations	IER defines the need to identify language skills and capability (proficiency). LC2IEDM has an entity PERSON-SKILL that carries a category-code and a proficiency-code.
50405	Border Crossing - Supplies-Classes	Data model provides for different types of consumable materiel as defined in the list of domain values in consumable-materiel-type-category-code. But these values do not specify the classes of supply for the materiel.
50501	CE04 - General; Action HP09 - Action	A solution is to add new domain values to action-task-verb-phrase-code (Confiscate) and to action-event-category-code (Confiscation)
50503	BC09 – Personnel Groups Add	Add domain value "is a member of" in the ORGANISATION-PERSON-ASSOCIATION-category-code.
50506	MetaData for 'owner-id' and 'update-seqnr' Physical Attributes	The metadata datafill describing the LC2IEDM is currently missing two attributes that appear only in the physical model ('owner-id' and 'update-seqnr').
50507	Incident Reporting	There are basically two elements to cater for. The first one is the Action-Event themselves The other part of this CP is the addition of an ACTION-EVENT-DETAIL to deal with PSO event details.
50508	Arrest Report, Reason – AR04	We need to be able to specify the reason for the arrest of a person.
50509	Arrest Report, Reason – AR05	The 'Charges' (AR05) as reason for an arrest may be covered by adding the domain-value 'based on charge of' to action-functional-association-category-code. With this it is possible to associate the ACTION-EVENT ('arrest') or ACTION-TASK ('arrest') to an ACTION-EVENT that describes the event that is reason for arresting.
50510	ARREST REPORT/RESISTANCE	There is a requirement to express the degree of resistance (nil, verbal protest, light or violent resistance) produced during an arrest.
50511	ARREST REPORT/witness	There is a requirement to express if an arrest was produced in the presence of a witness and in that case the witness's personal-id data.
50512	Civil Military Operations – main activity	We need to be able to specify the main activity of the organisation.
50513	Civil Military Operations – Current operations	We need to be able to specify the description of current operations involving GO/NGO/IO and the description of the type of involvement of those organizations.
50514	Civil Military Operations – Planned operations	We need to be able to specify the description of planned operations that may involve GO/NGO/IO and probably the description of the type of involvement of those organizations.
50517	Civil Military Operations – Humanitarian Aid and Assistance	We need to be able to specify any assistance given or required under the framework of Humanitarian Aid and Assistance.
50518	Civil Military Operations – Construction and repair	We need to be able to specify the amount of manpower that can or needs to be given by an organization.

CP No	Title	Synopsis
50519	Civil Military Operations – Public information	We need to be able to specify the current or future Public Information actions.
50520	Installations	Host nation support that in general refers to the storage facilities
50521	ACTION-AIRCRAFT-EMPLOYMENT-deplanement-method-code	We need to fix the definition for ACTION-AIRCRAFT-EMPLOYMENT-deplanement-method-code.
50522	POISONING INCIDENT	There is a need to express the type of agent used in a poisoning incident.
50523	Location Revision	One of the joint IERs is the Airspace Control Order (ACO). ACO imposes requirements that the current LOCATION structure cannot satisfy. The ACO has several geometric specifications that require expansion of the model.
50524	MASSGRAVES/SITE OF ALLEGED KILLS ACTION	The proposal is to add two new optional attributes to CONTROL-FEATURE-STATUS and one to FACILITY-STATUS: control-feature-status-security-status-code, control-feature-status-investigation-status-code and facility-status-security-status-code.
50525	Multiple definition Domain Values	The domains for ACTION-EVENT-category-code, ACTION-TASK-verb-phrase-code and CONTROL-FEATURE-TYPE-category-code contain domain values with multiple definitions.
50526	POINT OF CONTACT/LIASON OFFICER	POINT OF CONTACT/LIASON OFFICER is both a post or a role assigned to a person in an organisation; there is an operational need to be able to express this.
50527	RANK-CODE	We need to fix the definitions for some of the person-type-rank-code and military-military-post-type-rank-code.
50528	REPORTING-DATA-source-type-list	Rewrite all definitions to define the process of gathering information as a source. Check and revise definitions for jointness.
50529	Consumable-Materiel	Further subtyping of ammunition.
<b>ATCCIS Working Group 5-5</b>		
50530	Rollup of Associations between OBJECT-ITEM Subtypes and LOCATION	The proposal is to generalise the existing structure by rolling up the five associative entities that link the subtypes of OBJECT-ITEM to LOCATION into a single associative entity OBJECT-ITEM-LOCATION. The semantics of geometry associated with a location would be provided where required by an optional relationship to CONTROL-FEATURE-TYPE.
50532	Adding Relationships in Establishment to Build Unambiguous Hierarchies	A non-identifying relationship was added in CP 50206 to permit building unambiguous specifications of hierarchies of organization-types via the establishment structure. The relationship permitted the identification of a specific establishment (from possible multiple) to be associated with an organization-type that was named in the detail. This proposal extends the concept to the detail materiel-types that are part of the specification of ORGANISATION-TYPE-ESTABLISHMENT and MATERIEL-TYPE-ESTABLISHMENT.
50534	Unit-code	The Combined Joint Task Force requirements highlight a need to identify Units by a "Unit code" or a "Ship code". The current version of the Model does not directly support this requirement. This CP supports the solution of adding an attribute to the OBJECT-ITEM entity.
50535	Action-event-status and DVs	This CP is being generated based on notes taken during AWG 5 to fix identified deficiencies within the Model specification.
50536	***-STATUS entity definitions	This CP is being generated based on notes taken during AWG 5 to review the definitions of ***-STATUS entities, attributes and Domain values and to propose changes to those definitions where appropriate.
50538	"battlefield" to "battlespace"	This CP is being generated based on incorporating the terminology of "battlespace" into the definitions of the entities and domain values in the LC2IEDM. This is necessitated by the movement towards a Combined/Joint view of the old "battlefield".
50539	Abbreviations	This CP is being generated to bring the ATCCIS abbreviations in line with internationally accepted abbreviations.
50544	CJTF – Airfield Zone-Name	We need to be able to specify the name of an airfield zone.
50545	CJTF – Air Plan-Location-3D Grid Reference	We need to be able to specify the locations of control features given as "contact point, orbit point and initial point".
50546	CJTF – Aviation Areas - Type	We need to be able to specify the types of Aviation Areas.
50547	Close Air Support	The Combined Joint Task Force close air support (CAS) requirements highlight a need to identify the percentage of Close Air Support sorties allocated to an Action as well as the status of CAS in terms of their availability. The current version of the model supports some of these concepts but some minor structural changes are required in order to support CAS completely. New domain values are also required.

CP No	Title	Synopsis
50548	Coordination altitude	The CONTROL-FEATURE-TYPE-category-code has the domain value Standard-use army aircraft flight route. This domain value makes reference to the coordinating altitude.
50549	Mine presence code	The attribute FACILITY-mine-presence-code is determined to be in the wrong entity. It is not an attribute of the FACILITY but a status of the FACILITY.
50551	Host Nation support (support needed)	We need to be able to specify the support needed for Host Nation Support operations
50552	IRDU04, Incident Report - Drugs	Add type of drugs to consumable-material-type-category-code and subcategory-code.
50553	CJTF – ORBATAIR-03-Commitment Status	We need to be able to specify the commitment status of a unit.
50554	CJTF – ORBATAIR-Readiness	We need to be able to specify the readiness of a unit.
50555	CJTF – ORBATSEA-01 - Availability Status	We need to be able to specify the availability status of a unit.
<b>ATCCIS Working Group 6</b>		
35339	ARTILLERY TARGET DESCRIPTION	The proposal is to add a new attribute in FACILITY, facility-primary-construction-material-code, adding BRIDGE-TYPE as a subtype of FACILITY-TYPE with a new attribute bridge-type-category code, and a new attribute bridge-usage-code in BRIDGE. A new definition for BRIDGE is provided to be able to consider both ferry and raft as a type of BRIDGE.
50531	Addition of a Local Coordinate System in LOCATION	The proposal is to generalise the existing structure by adding an independent entity to specify a coordinate system. The coordinate system can be referenced either to an arbitrary point and direction or to an instance of OBJECT-ITEM.
50537	CONTROL-FEATURE-TYPE-category-code definitions	This CP is being generated based on notes taken during AWG 5 to review the definitions of CONTROL-FEATURE-TYPE-category-code domain value definitions and to propose changes to those definitions where appropriate.
50540	ACTION-TASK-verb-pharse-code & ACTION-EVENT-category-code	This CP is being generated to bring the domain set of ACTION-EVENT-category-code and ACTION-TASK-verb-pharse-code into line with their use within the LC2IEDM
50541	New Specification for Class Words date, and time	The current forms for expressing dates, and times in the data model are not necessarily the most practical nor the most intuitive. Date is now counted in days from the beginning of the 20th century and time in seconds from midnight Universal Time. The proposal is to change the date specification into a composite field based on year, month, and day; and time specifications into composite fields based on hour, minute, and second.
50550	Air Plan (Air Task Order) - Frequency	We need to be able to specify frequencies allocated for different purposes and participants of an Air Plan (Air Task Order)
50556	Personnel Identification	The requirement (PI20) is to be able to specify to which party, i.e. which ethnic group, a person belongs. The solution is to add a new attribute in PERSON.
50557	Personnel Identification	The proposal is to remove the value 'Pint'.
50601	PERSON ADDRESS	This proposal is a clean up of the PERSON entity where four attributes (father name, mother name and corresponding addresses), used only for a very specific context, can be removed adding a new associative entity, with the appropriate status entity and associations.
50602	ACTION-TASK-verb-pharse-code & ACTION-EVENT-category-code	This CP is being generated to bring the domain set of ACTION-EVENT-category-code and ACTION-TASK-verb-pharse-code into line with their use within the LC2IEDM
50604	APP6a – unresolved issues	During an attempt to map all the ground unit symbols in APP6a to LC2IEDM, some problems arose. All identified missing domain values are proposed to be added.
50605	MATERIEL-BODY-PART-CODE	This CP is being generated to delete the attribute MATERIEL-body-part-code.
50606	Based-on-charge-caught-in-the-act	The approved change proposal "CP AR05 v3" added two new domain values to action-functional-association-category-code. These are: "based on charge of" and "caught in the act of". The first one "based on charge of" is not really needed. And the second one "caught in the act of" does not really belong there. For example: Action A can not be caught in the act of Action B.
50607	CJTF – AIR PLAN (Airspace Control Order) – AP-ACO-37,39,54 Airspace time period	Not all time qualifiers needed for planning airspace are available
50608	CJTF – AIR PLAN (Airspace Control Order) – AP-ACO-45 - Control Point	We need to be able to specify the types of Control Points.

CP No	Title	Synopsis
50609	Ctrl-feat-type-cat-code incl ACU values	Not all Airspace Control Usages (ACU) or Airspace Control Means (ACM) for planning airspace are available in the CONTROL-FEATURE-TYPE-category-code domain set.
50610	Close Air Support	The Combined Joint Task Force close air support (CAS) requirements highlight a need to identify the status of Close Air Support. The current version of the model does not support CAS status--more specifically CAS on-call sorties. New domain values are required.
50611	CJTF – ORBATSEA-07- Equipment type	We need to be able to specify the equipment types that support ship types.
50612	ORBATSEA 12 – Planned Task	This change proposal takes care of requirements from ORBATSEA-12. After a few sessions with OPS Group, a list of values were given. This proposal only adds the newly proposed values.
50613	New naval task formation types	New domain values need to be added to take into account naval task formations.
50614	Close Air Support – Aircraft Type	The Combined Joint Task Force close air support (CAS) requirements highlight a need to identify the Aircraft Number used during a Close Air Support operations. New domain values are also required.
50615	AIR-FAC -01	Domain value HANGAR is missing from the FACILITY-TYPE-category-code.
50616	Pointing reporting-data information	The model offers currently the possibility to define "contexts" by the association of a set of records in REPORTING-DATA. But once defined the context, the only way to obtain the data that was introduced into the DB each time a REPORTING-DATA record is generated, is by an extensive query to all the entities in the model linked with REPORTING-DATA, looking for a specific reporting-data-id.
50617	EO16 - UXO	This CP is being generated to take care of the fact that UXO is a specific kind of materiel that can have a status of its own.
50618	Two Definitions for FAN- AREA Attributes	This CP is being generated to fix the definitions of attributes fan-area-orientation-angle and fan-area-sector-size-angle.
50619	Changes in Field Lengths	This CP is being generated to specify field lengths of selected attributes to match JCDB specifications.
50620	organisation-type - description -text	There were separate description texts for subtypes CIVILIAN-POST-TYPE, GOVERNMENT-ORGANISATION-POST-TYPE, PRIVATE-SECTOR-ORGANISATION-TYPE and GROUP-ORGANISATION-TYPE. The attributes were merged into a common "organisation-type-description-text" attribute in the supertype.
50621	CP MAR-OPS-02-03-04 - Graphics	This change proposal takes care of requirements from MAR-OPS-04, MAR-OPS-03, MAR-OPS-02. A list of values was developed in conjunction with Ops Group. Some of the values in the list are control features, one is a facility and one is task formation.
50622	CP 50622 more other areas for work	This change proposal takes care of quality issues.
<b>ATCCIS Working Group 6-5</b>		
35096	MM0083 Current Capability	Requirement stipulates a quantitative assessment of the unit's/formation's current holding of commodities or materiel using standardised measurements/units of expenditure for manpower, fuel, rations, ammunition, medical, material, water, spares. Also addresses changes needed to current holdings of commodities/ materiel required to meet future plans. The requirement is to be satisfied by using CONTEXT-ASSESSMENT.
50418	MASSGRAVES-CATEGORY OF BODIES	Original proposal was modified to correct Domain Value issues (gender-code) and (age-code).
50542	Communication access	This CP is an extension of the ACCESS subject area to cater to non-postal communications and it expands the descriptive power for network specification. This CP was revised to correct relationship problems, attributes that should have been removed in the original CP and to fix some domain value problems.
50543	Airfield Facilities	The proposal is to create a new entity "AIRFIELD" as a subtype of FACILITY, and express all the data required by means of its attributes. This CP was revised to correct wrong class words (dimension) on a couple of attributes. Should have been (quantity).
<b>ATCCIS Working Group 7</b>		
50701	Domain Values fix	Domain value changes in support of the QA of the model.

**Table 8. Change Proposals– Deferred**

CP No	Title	Synopsis
35325	Cyclic Activity	For new support of cyclic activity: The current GH3 structure does not support cyclic activity Spelling out each occurrence of a cyclic activity as a separate subactivity of a parent activity is not efficient To support collaborative planning by allowing multiple schedules to be proposed for the same task.
35333	Split-org-task-assoc	The initial proposal was to remove intent, data, and time attributes from ORGANSATION-TASK-ASSOCIATION and to place them in a new entity entitled ACTION-TASK-INTENT.
35343	ACTION-TASK-TIMING	In the current GH4 DM there is no way to represent a repetitive task as one task (with fixed/non-fixed intervals and duration).
35347	MATERIEL-MATERIEL-ASSOCIATION	There is no way to relate a piece of MATERIEL to another piece of MATERIEL. This can be useful for reporting that, for instance; a truck is transporting a tank.
35350	REPORTING-DATA Change Proposal	Provide the required information to define the security classification level of a specific REPORTING-DATA. To achieve this, our proposal is to add the new attribute reporting-data-classification-code to the REPORTING-DATA entity.
35356	OBJECT-TYPE Classification	The current GH3 structure restricts classification of OBJECT-ITEMs by OBJECT-TYPE to a single classification scheme, namely the classification scheme adopted by ATCCIS. This classification scheme is expressed in terms of the OBJECTTYPE hierarchy structure, category and subcategory codes within this structure and associated domain specifications. For general purposes (G2/G3 scope) this structure more or less satisfactory. During the past years the ATCCIS Data Group has processed a significant number of change proposals in relation to this area of the GH3 data model. Most of these change proposals have resulted in extensions of existing domain specifications (i.e. new values added) to accommodate for newly identified real world classifications.
50205	BRIDGE	Addition of parameters to the characterization of BRIDGE
50220	LC2IEDM Optimisation	The physical data model contains 190 "code" columns (attributes). All these "code" columns (attributes) share the same datatype– CHAR(6). The proposal is to replace this CHAR(6) datatype with a NUMBER datatype (NUMBER(1) to NUMBER(3) or maybe NUMBER(4).
50401	Standardisation - removal of non SQL-92 data types	The current version of the LC2IEDM (Ed. 2.0) data model uses the NUMBER data type, which is not specified as a part of the SQL-92 standard. The NUMERIC data type should replace the NUMBER data type.
50432	obstacle potential	Geographic features and facilities can, by their presence and design, act as an obstacle. It is critical that commanders be able to exchange information on the obstacle potential afforded by geographic features and facilities.
50433	Change Request-MIP	These change requests were discussed internally within the PWG, and agreed upon, before the change proposal was finalised. The required changes to the LC2IEDM are listed below. The following table outlines the LC2IEDM changes required to meet the PWGs information requirements based on the IERs and the MTFs. The table identifies the reference number for each Change Request, the name of the Entity, the name of the Attribute, the requested Action and provides a brief explanation of the requirement.
50560	Consumable-Materiel Further Subtyping- Construction - Material	The question was raised about whether the CONSUMABLE-MATERIEL should be sub-typed further or not.
50561	CJTF – ORBATAIR-14 Sustainability	We need to be able to specify the sustainability status in other words the estimated level of capability for days of supply a unit.
50603	FREQUENCY CAPABILITY	The capability part has been taken out of the Communication proposal. This proposal is focused on adding a small part of that proposal to the capability structure, i.e. the possibility to specify the frequency of intended utilization of a piece of equipment.
50624	APP6a – light, medium, heavy units	The proposal is to add a unit-type-transportability-qualifier-code.
50625	Diseases	The concept proposal is proposing to add a new entity to capture diseases.

**Table 9. Change Proposals– Withdrawn**

CP No	Title	Synopsis
35127	JFB029 Time qualifier.doc	The APP-9 LANDINTREP message specifies temporal reference to the time an event occurs. REPORTING-DATA entity does not directly provide this temporal reference. Concept was already captured in the model in ACTION - TASK-start-qualifier-code and ACTION-TASK-end-qualifier-code.
50212	Civ Orgs	CP was merged with CP 50303 AR07-ORGANISATION-TYPE.doc
50213	Displaced persons	CP was merged with CP 50413 PI9-PERSON -TYPE+PSYOPS.doc
50214	Language skill	CP was merged with CP 50305 PI05 -Language-skill-AWG5.doc
50215	PSYOPS-equipment	CP was merged with CP 50429 Equipmentsub-types.doc
50216	PSYOPS-person-type	CP was merged with CP 50413 PI9-PERSON -TYPE+PSYOPS.doc
50219	Host Nation Support	Never developed into an implementable CP
50422	CA12-General overall capacity.doc	<p>This should be the overall capacity of the camp, given that all necessary conditions are filled in, in order to take care of this amount of people. In a separate field an assessment of the actual situation should be given.</p> <p>Making up a start-state establishment for the camp you can have the initial holdings for materiel, food stocks, bed count an so on. Then later, given the actual holdings, application should be able to do the calculations giving the percentage for each individual item and given that an overall evaluation could be given as the Commanders Assessment.</p>
50304	EQUIPMENT-TYPE-subcat-code	CP was merged with CP 50529 Consumable-Materiel- Further-Subtyping-Ammunition.doc
50307	PS03-PSYOPS-person-type	CP was merged with CP 50413 PI9-PERSON -TYPE+PSYOPS.doc
50308	Addition of parameters to the characterization of BRIDGE	The planning and execution tasks carried out by Engineer CP's demand a complete characterization of the BRIDGE entity.
50402	BC01-General-Direction	Model could already handle the requirement.
50404	BC09- Personnel-Groups	CP was merged with CP 50413 PI9-PERSON -TYPE+PSYOPS.doc
50407	BC15- Vehicles-Operational Status	CP was merged with CP 50421 CA2-CA4-CA8-Running water-Medical -Occupation.doc
50408	BC18- Vehicles-Type	CP was merged with CP 50429 Equipmentsub-types.doc
50409	BC19-Weapons -Caliber	CP was merged with CP 50429 Equipmentsub-types.doc
50410	Border Crossing - Weapons Type	CP was merged with CP 50429 Equipmentsub-types.doc
50417	MG07-Bodies number	CP was merged with CP 50418 MG08-Bodies category.doc
50425	CE14-Calibre	CP was merged with CP 50429 Equipmentsub-types.doc
50502	Accidents	CP was merged with CP 50507 Incident report.doc
50504	RE09-Sponsor.doc	Implemented in CP 50423 CA19-Sustainment Agency.doc as "is sponsor for"
50515	CM08 Concerns.doc	CP was never implemented, as there was nothing to implement.
50516	CM09 Conclusions.doc	CP was never implemented, as there was nothing to implement.
50533	CONTROL-FEATURE sequence	<p>The Airspace Control Order (ACO) message requires that a sequence number be assigned to each leg of a track. Since the parameters for each leg can vary, the geometry specification for track can be applied to only one leg type, although the same specification can be applied to more than one leg instance.</p> <p>Specification of track entails the creation of instances of CONTROL-FEATURE for TRACK and LEGn where n=1,...,m. Each LEGn must be related to TRACK via CONTROL-FEATURE-CONTROL-FEATURE-ASSOCIATION.</p>
50558	CJTF – Air Plan-Confirmation	We need to be able to specify whether photo confirmation is required for reconnaissance task.
50559	CJTF – Air Plan-Location-Friendly Forces	We need to be able to specify the locations of friendly forces within the proximity of 1000 meter of a given target.
50623	CJTF – Air Plan-Target Description	We need to be able to put a description of a target in an Air Task Order.

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## 5. FUTURE WORK

### 5.1 Introduction

A number of requirements from Article V, CRO and CJTF remain unsatisfied. The Data Group has identified a number of issues that bear further investigation. Some are a result of Change Proposals that were deferred, and others are issues that surfaced during a particular discussion.

### 5.2 Remaining Article V, CRO and CJTF requirements

The remaining requirements are listed in Table 10, Table 11 and Table 12. The status “Requirement Withdrawn” applies only to Article V requirements that were withdrawn during Phase V.

**Table 10. Article V requirements**

IER NAME	ICE-ID	ICE NAME	STATUS
AIR REQUEST	MM0766	Control Pt Marker(s)	Partial - Structure(s) Needed
AIR REQUEST	MM0773	Type of Control	Partial - Attribute(s) Needed
AIR REQUEST	MM0774	EMCON Plan	Partial - Structure(s) Needed
AIR REQUEST	MM0780	Acknowledge	Requirement Withdrawn
AMMUNITION FIRE UNIT-FIRE UNIT STATUS	MM0689	Response Time	Requirement Withdrawn
AMMUNITION FIRE UNIT-FIRE UNIT STATUS	MM0700	Traverse Limits: Left Limit	Partial - Attribute(s) Needed
AMMUNITION FIRE UNIT-FIRE UNIT STATUS	MM0701	Traverse Limits: Right Limit	Partial - Attribute(s) Needed
AMMUNITION FIRE UNIT-FIRE UNIT STATUS	MM0707	Nuclear Radiation Status: Nuclear Category	Requirement Withdrawn
CASUALTY EVACUATION REQUEST	MM0126	Comms Details	None - Structure(s) Needed
CCIS STATUS REPORT	MM0587	Link Status	Partial - Structure(s) Needed
CCIS STATUS REPORT	MM0588	Courier Schedule	None - Structure(s) Needed
CCIS STATUS REPORT	MM0589	CCIS Status	Requirement Withdrawn
CCIS STATUS REPORT	MM0591	Time Details	Requirement Withdrawn
COMMON ELEMENTS OF APP-9 IERS	ZZ0003	Exercise Identification: Additional Identifier	None - Structure(s) Needed
ELECTRONIC WARFARE REQUESTING/TASKING MESSAGE	MM0561	Task Outline	Requirement Withdrawn
ELECTRONIC WARFARE REQUESTING/TASKING MESSAGE	MM0565	Target Type	Requirement Withdrawn
ELECTRONIC WARFARE REQUESTING/TASKING MESSAGE	MM0566	Required Activity	Requirement Withdrawn
ELECTRONIC WARFARE REQUESTING/TASKING MESSAGE	MM0567	Frequency(ies)	Requirement Withdrawn
ELECTRONIC WARFARE REQUESTING/TASKING MESSAGE	MM0569	Declassification	Requirement Withdrawn
ENEMY LAND FORCES SITUATION REPORT	JFC005	Enemy Forces War Order of Battle	Partial - Attribute(s) Needed

ENEMY LAND FORCES SITUATION REPORT	JFC013	Force Weapons: Short Title	Requirement Withdrawn
ENEMY LAND FORCES SITUATION REPORT	JFC019	Ammunition On Hand: Short Title	Requirement Withdrawn
FIRE MISSION-FIRE MISSION COMMAND	MM0660	Fire Mission Command	Requirement Withdrawn
FIRE MISSION-FIRE MISSION COMMAND	MM0664	Report to Observer	Requirement Withdrawn
FIRE MISSION-FIRE MISSION COMMAND	MM0665	End of Mission	Requirement Withdrawn
FIRST HOSTILE ACT REPORT	ES0015	Nature of Damage: Personnel Casualties	Derived - Partial
FRAGMENTARY ORDER	RR0021	Acknowledge	Requirement Withdrawn
HELICOPTER LANDING SITE REPORT	MM0412	LIMA	Partial - Structure(s) Needed
HELICOPTER REQUEST	MM0466	Passenger Details	Partial - Structure(s) Needed
INTELLIGENCE REPORT	ES0025	Intelligence Report:Narrative	Requirement Withdrawn
INTELLIGENCE REPORT	ES0026	Intelligence Report:Narrative	Requirement Withdrawn
INTELLIGENCE REPORT	ES0027	Main Part of INTREP	Requirement Withdrawn
INTELLIGENCE REQUEST	ES0034	Request References: Information/Intelligence Use	Requirement Withdrawn
INTELLIGENCE REQUEST	ES0038	Request Details: Description	Requirement Withdrawn
INTELLIGENCE REQUEST	ES0051	Request Time Specifications: Latest time the information is of value	None - Structure(s) Needed
INTELLIGENCE REQUEST	ES0054	Request Time Specifications: Report frequency	None - Structure(s) Needed
INTELLIGENCE SUMMARY	JFB011	OPFOR Activity Area maritime operations - 1	Requirement Withdrawn
INTELLIGENCE SUMMARY	JFB013	OPFOR Activity Area maritime operations - 3	Requirement Withdrawn
LAND INTELLIGENCE REPORT	JFB024	Enemy unit identity: Echelon	Partial - Domain Value(s) Needed
LAND INTELLIGENCE REPORT	JFB030	Time: Date -Time	Requirement Withdrawn
LAND INTELLIGENCE REPORT	JFB035	Enemy Activity: Designator	Requirement Withdrawn
MEDICAL ASSESSMENT REPORT	MM0163	Medical Evacuation	Requirement Withdrawn
MEDICAL ASSESSMENT REPORT	MM0165	Preventive Health	Requirement Withdrawn
NON-NUCLEAR FIRE PLANNING-FIRE PLAN	MM0743	Trajectory Type	None - Structure(s) Needed
NON-NUCLEAR FIRE PLANNING-FIRE PLAN	MM0747	Projectiles: First Selected Projectile	Requirement Withdrawn
NON-NUCLEAR FIRE PLANNING-FIRE PLAN	MM0748	Projectiles: Second Selected Projectile	Requirement Withdrawn
NON-NUCLEAR FIRE PLANNING-FIRE PLAN	MM0749	Fuzes: First Selected Fuze	Requirement Withdrawn
NON-NUCLEAR FIRE PLANNING-FIRE PLAN	MM0750	Fuzes: Second Selected Fuze	Requirement Withdrawn
NUCLEAR BIOLOGICAL AND CHEMICAL REPORT 1	MM0029	JULIET	Requirement Withdrawn
PRESENCE REPORT	JFC028	Unit Being Reportable: Time	Requirement Withdrawn
PRESENCE REPORT	JFC031	Activity	Requirement Withdrawn
RADIO FREQUENCY REPORT	MM0622	RADIO FREQUENCY REQUEST - THREE	Partial - Structure(s) Needed
RADIO FREQUENCY REPORT	MM0625	RADIO FREQUENCY REQUEST - SIX	Clarification Needed
RADIO FREQUENCY REPORT	MM0626	RADIO FREQUENCY REQUEST - SEVEN	Clarification Needed
RADIO FREQUENCY REPORT	MM0627	RADIO FREQUENCY REQUEST - EIGHT	Partial - Structure(s) Needed
RADIO FREQUENCY REPORT	MM0628	RADIO FREQUENCY REQUEST - NINE	Clarification Needed
RADIO FREQUENCY REPORT	MM0630	RADIO FREQUENCY REQUEST - ELEVEN	Clarification Needed
RADIO FREQUENCY REPORT	MM0631	RADIO FREQUENCY REQUEST - TWELVE	Clarification Needed
RADIO FREQUENCY REPORT	MM0633	RADIO FREQUENCY REQUEST - FOURTEEN	Clarification Needed

**Table 11. Combined Joint Task Force requirements**

IER NAME	ICE-ID	ICE NAME	STATUS
Unit & Facility Information	AP-ACO-09	Air Plan (Air Control Order) - ACM Status	Partial - Structure(s) Needed
Unit & Facility Information	AP-ACO-57	Air Plan (Air Control Order) - Reference	Partial - Structure(s) Needed
Unit & Facility Information	AP-ACO-43	Air Plan (Air Control Order) - Airspace time period - Airspace time period	Partial - Structure(s) Needed
Unit & Facility Information	AP-ACO-40	Air Plan (Air Control Order) - Airspace time period - Airspace time period	Partial - Attribute(s) Needed
Unit & Facility Information	AP-ACO-44	Air Plan (Air Control Order) - Airspace time period - Airspace time period	Partial - Structure(s) Needed
Unit & Facility Information	AIR-FAC-13	Airfield Facilities - Type	Partial - Structure(s) Needed
Unit & Facility Information	ORBATSEA-15	ORBATSEA - Type	Clarification Needed
Unit & Facility Information	HAR-FAC-01	Harbor Facilities - Dock length	Partial - Domain Value(s) Needed
Unit & Facility Information	HAR-FAC-06	Harbor Facilities - terminal operating types	Partial - Domain Value(s) Needed
Unit & Facility Information	HAR-FAC-07	Harbor Facilities - Type	Partial - Structure(s) Needed
Unit & Facility Information	AP-ACO-12	Air Plan (Air Control Order) - ACO identification	Partial - Structure(s) Needed

**Table 12. Crisis Response Operations requirements**

IER NAME	ICE-ID	ICE NAME	STATUS
Camps	CA04	Conditions; Medical support	Partial - Structure(s) Needed
Camps	CA14	General; Age Group	Partial - Structure(s) Needed
Camps	CA15	General; Sex	Partial - Structure(s) Needed
Camps	CA16	General; Religion	Partial - Structure(s) Needed
Camps	CA17	General; Nationality	Partial - Structure(s) Needed
Camps	CA21	General; Contingency planning	Partial - Attribute(s) Needed
Camps	CA23	Health; Disease	Clarification Needed
Camps	CA24	Health; Quantity	Partial - Structure(s) Needed
Camps	CA25	Health; Age Group	Partial - Structure(s) Needed
Confiscated Equipment	CE10	General; Method of storage	Partial - Structure(s) Needed
Confiscated Equipment	CE12	Ammunitions; Quantity	Partial - Structure(s) Needed
Civil Military Operations	CM29	Requirements - Materiel	Clarification Needed
EOD Incident	EO16	Details	Clarification Needed
Holdings parties	HP02	Method of storage	Partial - Structure(s) Needed
Holdings parties	HP14	Logistics stocks Method of storage	Partial - Structure(s) Needed
Incident report	IRAC02	Accidents - Casualties	Partial - Structure(s) Needed
Personal Identification	PI02	Age Group; Children (up to 12 yo) Adults, Elders( over 65 yo)	Partial - Structure(s) Needed
Personal Identification	PI07	Parties	Partial - Attribute(s) Needed
Psyops	PS06	Enemy activity Trend	Partial - Structure(s) Needed
Psyops	PS13	Method of dissemination	Partial - Structure(s) Needed

### 5.3 Change Proposals for Future Work

This list is presented in ATCCIS Change Proposal number order. Identified in Table 13 is a short synopsis of the Change Proposals that could be used as a basis for the future.

**Table 13. Change Proposals**

CP No	Title	Synopsis
32038	ADatP-3 mapping with the entity BRIDGE	1) LENGTH OF BRIDGE IN METRES (1052/7) : numeric, 2) RELATIVE SPEED OF CURRENT (1113/3) : FAST/SLOW (to be related to the entity BRIDGE), 3) RIVER DEPTH IN METRES (1247/2) : numeric (not to be related to the entity BRIDGE).
32040	ADatP-3 mapping with the entity LOGICAL-NETWORK	1) COMMUNICATION LINK TYPE (1275/1) : CABLE, FIBER, LASER, RADIO, etc. 2) CAPACITY OF VOICE CHANNEL EQUIVALENTS (1044/63) : numeric (logical-network-minimum-capacity-code could be a solution for the mapping), 3) QUANTITY OF VOICE CHANNEL EQUIPMENT (1044/104) : numeric, 4) SPECIAL HANDLING MARKINGS (1101/2) : ATOMAL / CRYPTO SECURITY, 5) LINK STATUS (1138/5) : GREEN / RED / YELLOW.
35063	Adding holding-principal-equipment-indicator-code	Add holding-principal-equipment-indicator-code (or a more general structure for such things as LFRIL).
35075	HOLDING structure	Holding structure. Change HOLDING structure to HOLDING and HOLDING-DETAIL
35096	MM0083 Current Capability	Provides a tabular quantitative assessment of the unit's/formation's current holding of commodities or materiel using standardised measurements/units of expenditure for manpower, fuel, rations, ammunition, medical, material, water, spares. Future requirements: Gives a quantitative assessment in tabular format of changes needed to current holdings of commodities/ materiel required to meet future plans. Original decision has been questioned. The Domain Value "Days of Supply" appears to be wrong. Decision to remove DV and to change the evaluation in the IER Database and Chapter 12 of WP 5-5 to reflect that using CONTEXT-ASSESSMENT.text can satisfy this requirement.
35302	Domain optionality	No Nulls for all code attributes. These should all be made mandatory.
35307	New domain values for FEAT-TYPE Change Proposal	1. – Introduction - In a tactical Information system may be necessary to enter text as control-feature. 2. – Proposal - Add the value 'Text' to the domain of the attribute control-feature-type-category-code
35325	Cyclic Activity	To support collaborative planning by allowing multiple schedules to be proposed for the same task.
35333	Split-org-task-assoc.doc	The initial proposal was to remove intent, data, and time attributes from ORGANSIATION-TASK-ASSOCIATION and to place them in a new entity entitled ACTION-TASK-INTENT.
35342	OBJECTITEM-OBJECT-ITEM-ASSOCIATION	The GH4 DM contains nine entities that associate a subtype of OBJECTITEM with another subtype of OBJECT-ITEM. Each of these *-ASSOCIATION entities has a *-STATUS entity. The proposal is to create a new entity called OBJECTITEM-OBJECT-ITEM-ASSOCIATION and add all the *-ASSOCIATION entities as subtypes of this entity.
35343	ACTION-TASK-TIMING	In the current GH4 DM there is no way to represent a repetitive task as one task (with fixed/non-fixed intervals and duration).
35347	MATERIEL-MATERIEL-ASSOCIATION	There is no way to relate a piece of MATERIEL to another piece of MATERIEL. This can be useful for reporting that, for instance; a truck is transporting a tank.
35348	C APABILITY Change Proposal	To provide the required information to define a specific capability as exclusive, i.e. to indicate its incompatibility with any other capability of the same type, defined by a different capability-subcategory-code. To achieve this, our proposal is to add a new attribute to the ACTION-REQUIRED-CAPABILITY, OBJECT-ITEM-CAPABILITY and OBJECT-TYPE-NORM-CAPABILITY entities. See attached Paper for details.
35350	REPORTING-DATA Change Proposal	Provide the required information to define the security classification level of a specific REPORTING-DATA. To achieve this, our proposal is to add the new attribute reporting-data-classification-code to the REPORTING-DATA entity.
35356	OBJECTTYPE CLASSIFICATION	The current GH3 structure restricts classification of OBJECTITEMs by OBJECT-TYPE to a single classification scheme, namely the classification scheme adopted by ATCCIS. This classification scheme is expressed in terms of the OBJECT-TYPE hierarchy structure, category and subcategory codes within this structure and associated domain specifications (see diagram below).
50205	Addition of parameters to the characterization of BRIDGE	The planning and execution tasks carried out by Engineer CP's demand a complete characterization of the BRIDGE entity.
50220	Optimisation – changing datatypes	The physical data model contains 190 "code" columns (attributes). All these "code" columns (attributes) share the same datatype – CHAR(6). The proposal is to replace this CHAR(6) datatype with a NUMBER datatype (NUMBER(1) to NUMBER(3) or maybe NUMBER(4)).

50401	Standardisation - removal of non SQL-92 data types	The current version of the LC2IEDM (Ed. 2.0) data model uses the NUMBER data type, which is not specified as a part of the SQL-92 standard. The NUMERIC data type should replace the NUMBER data type.
50432	obstacle potential	Geographic features and facilities can, by their presence and design, act as an obstacle. It is critical that commanders be able to exchange information on the obstacle potential afforded by geographic features and facilities.
50433	Change Request-MIP	These change requests were discussed internally within the PWG, and agreed upon, before the change proposal was finalised. The required changes to the LC2IEDM are listed below. The following table outlines the LC2IEDM changes required to meet the PWGs information requirements based on the IERs and the MTFs. The table identifies the reference number for each Change Request, the name of the Entity, the name of the Attribute, the requested Action and provides a brief explanation of the requirement.
50560	Consumable-Materiel Further Subtyping- Construction-Material	The question was raised about whether the CONSUMABLE-MATERIEL should be sub-typed further or not.
50561	CJTF – ORBATAIR-14- Sustainability	We need to be able to specify the sustainability status in other words the estimated level of capability for days of supply a unit.
50603	FREQUENCY CAPABILITY	The capability part has been taken out of the Communication proposal. This proposal is focused on adding a small part of that proposal to the capability structure, i.e. the possibility to specify which frequency a piece of equipment is intended to be utilized at.
50624	APP6a – light, medium, heavy units	The proposal is to add a unit-type-transportability-qualifier-code.
50625	CA-23 Diseases	This is from the Camps IER. Needs clarification from OPS group what they exactly need.; I expect that the US proposal on the Medical Area will make it possible to talk about Diseases.  We need a list of diseases and do we report by individual disease or by # of persons with a disease?  Injuries, infectious diseases, non-infectious diseases.

## 5.4 Issues for Future Work

Identified in Table 14 is a short synopsis of the Issues that could be used as a basis for the future. There is no particular order or preference in this list.

**Table 14. Issues**

Issue No	Synopsis
1	Investigation of the current Triage codes and their definitions.
2	Current DATE-TIME specification needs to be looked at.
3	Additional domain values for the attribute REFERENCE-format-code.
4	ACTION-TASK-STATUS-timing-code. Attribute is not modelled correctly. It belongs in an associative entity between ACTION-TASK and REPORTING-DATA.
5	Proposed renaming of OBJECT-ITEM-ACTION-EFFECT and OBJECT-TYPE- ACTION-EFFECT.
6	Change Proposal 50550 back to the OPS group for clarification.
7	Loggability of the "whole" model.
8	CRUD rules.
9	Evaluate the CAPABILITY-category-code definitions.
10	Issue in the calibre-code domain set of calibres > than 400
11	RELATIVE-POINT using COORDINATE-SYSTEM has to be referenced to the COORDINATE-SYSTEM and cannot be referenced to the "Undefined" POINT. Subtyping of POINT should be complete. Need to remove "Undefined" and "NOS" from POINT-category-code.
12	PERSON-LANGUAGE-SKILL-general-proficiency-code, No NATIVE speaker (definition)
13	Definition of ACTION-RESOURCE-EMPLOYMENT needs to be modified in view of the optional relationship to ACTION-OBJECTIVE.
14	Create a subtype of RPTD for intelligence attributes (accuracy-code, reliability-code and source-type-code)
15	Add PERSON-FACILITY-ASSOCIATION and PERSON-GEOGRAPHIC-FEATURE-ASSOCIATION entities to express ownership in support of CRO (MOOTW).
16	Proposal to add a UOM to CAPABILITY to express a "number" e.g. MLC is a dimensionless quantity.
17	Entity ACTION-TASK definition "planning is known" to "planning details are known".
18	CONTROL-FEATURE-TYPE-category-code value "position centroid"
19	CONTEXT-OBJECT-ITEM-ASSOCIATION-category-code - ADD

20	Create an ORBAT structure in connection with ORG-ORG-ASSOCIATION – Canada EBB model
21	Add “detainee” as a PERSON-TYPE.
22	Domain value “Guarded” in control-feature-status-security-status-code. Definition implies watched when in fact, it is guarded.
23	Review dimension attributes in EQUIPMENT-TYPE and CONSUMABLE-MATERIEL-TYPE. The consumable dimensions refer to packaged values. These belong in a different structure since inherent properties belong in this table. If the change is made, then both entities would contain identical dimension traits and these could be then moved to the supertype MATERIEL-TYPE.
24	Proposal to rename facility-status-mine-presence-code to facility-status-mine-presence-indicator-code.
25	organisation-materiel-type-association-assigned-land-forces-reportable-item-list-time is MANDATORY. Should be OPTIONAL.
26	Definition for DV “Soft” in geographic-feature-status-surface-firmness-code has to be reviewed.
27	D V “Not otherwise specified” in CAPABILITY-category-code maybe incorrect.
28	detail-person-type-id in ORGANISATION-TYPE-ESTABLISHMENT-PERSON-TYPE-DETAIL. Change the Rolename.
29	candidate-target-detail-discriminator-code is a discriminator. Every other discriminator is a “category-code”. Needs to be fixed for consistency.

## **Annex A.**

### **Changes Made to GH4 Data Model in Evolving LC2IEDM Version 5**

#### **A.1 Overview**

A.1.1 This annex contains a comparison of GH4 version of the data model with the LC2IEDM version of the data model. GH4 is the direct predecessor to the current LC2IEDM. The listing in this annex is intended to serve as an aid to system developers who have implemented GH4 in their systems and intend to update the database specification and the ARM parameters to accommodate LC2IEDM Version 5. The listing can also be a convenient reference for readers who wish to follow the evolution of Generic Hub specifications.

A.1.2 Major changes to GH4 are summarised in the following section at the entity level. The listing in Section A.3 contains the details of every change at the entity and attribute level. The evolution of LC2IEDM also entailed amendments to the sets of enumerated domains. The changes included additions (such as those to make LC2IEDM more compatible with APP-6a) as well as rationalisations of existing sets. A comparison of domain value changes is not a part of this annex; the reader is referred to ATCCIS WP 5-5 Edition 5.0 Annex E for documentation of the LC2IEDM domain values or to the electronic version of Land C2 Information Exchange Data Model (LC2IEDM) as an ERwin file. The total number of domain values is approximately 4,300.

#### **A.2 Summary of Major Structural Changes to GH4**

A.2.1 This section contains a summary of major structural changes. These are the ones that entail deletion of entities, expansion or addition of structures to improve functionality, and the substitution of structures for existing ones. Lesser changes, such as addition of attributes to existing entities or simple naming changes, are not addressed here but may be found in the list of Section A.3.

A.2.2 LC2IEDM has a new LOCATION structure. Highlights are listed below.

A.2.2.1 ELEVATED-ABSOLUTE-POINT was replaced by an independent entity VERTICAL-DISTANCE to accommodate new requirements.

A.2.2.2 SURFACE-REGION was re-named POLYGON-AREA and SURFACE-REGION-BOUNDING-LINE was replaced by a non-identifying relationship from LINE to POLYGON-AREA (the latter change should have been made even in the absence of new requirements).

A.2.2.3 The non-identifying relationship from POINT to SURFACE was removed. It was replaced by separate non-identifying relationships to FAN-AREA and REGULAR-AREA for which the original relationship had been established, but it had no real application to SURFACE-REGION.

A.2.2.4 The subtype SURFACE-VOLUME of GEOMETRIC-VOLUME replaced the associative entity GEOMETRIC-VOLUME-SURFACE. It has a non-identifying relationship to SURFACE.

A.2.2.5 SPHERE-VOLUME was added as an explicit structure to replace a functionality that was implicit in the existing structure and could not be represented without GEOMETRIC-VOLUME-SURFACE. Formerly, a circle had to be defined using REGULAR-AREA with a centre point whose altitude was specified. The circle was then linked to GEOMETRIC-VOLUME via GEOMETRIC-VOLUME-SURFACE and the geometric-volume-category-code was set to "Sphere."

A.2.2.6 New entities have been added to accommodate geometric shape requirements: CORRIDOR-AREA, ORBIT-AREA, POLYARC-AREA, and TRACK-AREA.

A.2.2.7 REGULAR-AREA has been re-named ELLIPSE. Two relationships to ABSOLUTE-POINT have been added.

A.2.2.8 Precision codes in POINT have been moved to ABSOLUTE-POINT, RELATIVE-POINT, and VERTICAL-DISTANCE.

A.2.2.9 All altitude specifications are now provided through non-identifying relationships from VERTICAL-DISTANCE.

A.2.2.10 An independent entity COORDINATE-SYSTEM and subtypes OBJECT-REFERENCE and POINT-REFERENCE were added.

A.2.3 The LC2 IEDM structure for ORGANISATION-TYPE has been changed significantly. The UNIT-TYPE structure has been contracted and the requirements rolled up. New entities to handle expanded requirements from the Crisis Response Operations (CRO) to identify groups of people and civilian organisations were added.

A.2.4 The LC2 IEDM structure for EQUIPMENT-TYPE has been expanded significantly. It added subtype entities AIRCRAFT-TYPE, ELECTRONIC-EQUIPMENT-TYPE, ENGINEERING-EQUIPMENT-TYPE, LAND-WEAPON-TYPE, MISCELLANEOUS-EQUIPMENT-TYPE, NBC-EQUIPMENT-TYPE, RAILCAR-TYPE, VEHICLE-TYPE and VESSEL-TYPE.

A.2.5 An expanded subtyping structure for CONSUMABLE-MATERIEL-TYPE was added. Explicit entities were added to handle NBC requirements. They are BIOLOGICAL-AGENT-TYPE, CHEMICAL-AGENT-TYPE and NUCLEAR-AGENT-TYPE. An additional entity AMMUNITION-TYPE was also added. The addition of this entity allowed the relationship from FIRE-CAPABILITY to be moved from CONSUMABLE-MATERIEL-TYPE to AMMUNITION-TYPE.

A.2.6 Three new subtypes were added to the FACILITY structure. They are AIRFIELD, NETWORK and MASSGRAVE. Additionally the existing subtypes BRIDGE and MINEFIELD had attributes added. To support these new subtypes, values were added on the FACILITY-TYPE side for MASSGRAVE and NETWORK. A new subtype BRIDGE-TYPE was added as attributes were identified for that entity.

A.2.7 A complete new MEDICAL-FACILITY-STATUS construct was added to the FACILITY-STATUS to support casualty accounting. The issues involved typing in several disparate categories and incremental reporting. The LC2 data model caters primarily to status reporting at a given point in time, whether past, present or future, whereas casualty accounting required in medical reporting entails incremental reporting –



a requirement that had not been addressed in the model so far. This required the creation of a subtype MEDICAL-FACILITY-STATUS with three child and three doubly associative entities to capture the various kinds of status information.

A.2.8 An expanded structure to identify PERSONs and their skills was added to LC2IEDM. The PERSON-SKILL entity was renamed to PERSON-LANGUAGE-SKILL and the categories of languages was greatly expanded. A new entity PERSON-IDENTIFICATION-DOCUMENT was added to support CRO requirements for identification of individuals.

A.2.9 A new OBJECT-ITEM-ACCESS structure was added to address multiple ways of contacting individuals or groups. The subtype ADDRESS-POSTAL provides for mail access and NETWORK-SERVICE-ACCESS for any type of non-postal communications, whether it is an e-mail, telephone number, an IP address, or a call sign.

A.2.10 An expanded ACTION-EVENT substructure was introduced specifically to handle NBC events. The ACTION-EVENT-DETAIL entity was added to allow supplemental information about an ACTION-EVENT to be entered.

A.2.11 Two new associative entities were added to support CRO requirements. They are PERSON-MATERIEL-ASSOCIATION in order to be able to identify who owns a particular piece of material and PERSON-PERSON-ASSOCIATION to be able to identify relationships between various individuals. Two \*-STATUS entities were also added to identify the start and end of those relationships.

A.2.12 The CAPABILITY structure was changed by adding new entities MISSION-CAPABILITY and MOBILITY-CAPABILITY and deleting LAND-MANOUEVRE-CAPABILITY. MOBILITY-CAPABILITY incorporates the LAND-MANOUEVRE-CAPABILITY requirements and additional air and surface/subsurface requirements.

A.2.13 The entity ORGANISATION-ACTION-TASK-ROE-STATUS was added to capture the relationship between a specific ORGANISATION and a specific ACTION-TASK-RULE-OF-ENGAGEMENT with respect to a request for application, a request for cancellation, or an authorisation.

A.2.14 A completely new NETWORK concept was added. Existing entities LOGICAL-NETWORK and LOGICAL-NODE were deleted. Data attributes from LOGICAL-NETWORK were combined with the new entity NETWORK that is a subtype of FACILITY. LOGICAL-NETWORK-SERVICE became a child of NETWORK and was re-named NETWORK-SERVICE. A data attribute from LOGICAL-NODE was moved to NETWORK-SERVICE-ACCESS.

### **A.3 List of Changes**

This section lists every change that was made to the entities and attributes of GH4 to arrive at the LC2IEDM data model. The GH4 entities in the leftmost column are arranged alphabetically for ease of cross-reference to previous versions of LC2IEDM. The associated attributes are listed in the second column. In some cases, an entity and its attributes are juxtaposed to another entity to which it is logically connected. A reference

is inserted for every such entity to indicate where the substantive information is to be found. Entity level changes have dashes in the attribute columns.

LC2/GH4 Edition 3.0 March 2000		LC2/GH5 Edition 5.0 March 2002		Comment
Entity Name	Attribute Name	Entity Name	Attribute Name	
ABSOLUTE-POINT	absolute-pointid	ABSOLUTE-POINT	absolute-point-id	New Entity definition
	absolute-point-elevation-category-code		absolute-point-vertical-distance-id	Category code replaced by FK to VERTICAL-DISTANCE
	absolute-point-latitude-coordinate		absolute-point-latitude-coordinate	No change
	absolute-point-longitude-coordinate		absolute-point-longitude-coordinate	No change
			absolute-point-angular-precision-code	New attribute
ACTION	action-id	ACTION	action-id	No change
	action-category-code		action-category-code	No change
	action-name		action-name	No change
ACTION-AIRCRAFT-EMPLOYMENT	action-id	ACTION-AIRCRAFT-EMPLOYMENT	action-id	No change
	action-resource-index		action-resource-index	No change
	action-aircraft-employment-approach-offset-code		action-aircraft-employment-approach-offset-code	No change
			action-aircraft-employment-deplanement-method-code	New attribute
	action-aircraft-employment-egress-direction-angle		action-aircraft-employment-egress-direction-angle	No change
	action-aircraft-employment-inflight-report-requirement-indicator-code		action-aircraft-employment-inflight-report-requirement-indicator-code	No change
	action-aircraft-employment-terminal-attack-direction-angle		action-aircraft-employment-terminal-attack-direction-angle	No change
ACTION-CONTEXT	action-id	ACTION-CONTEXT	action-id	No change
	context-id		context-id	No change
	action-context-index		action-context-index	No change
	action-context-category-code		action-context-category-code	No change
ACTION-EFFECT	action-id	ACTION-EFFECT	action-id	No change
	action-effect-index		action-effect-index	No change
	action-effect-category-code		action-effect-category-code	No change
	action-effect-description-code		action-effect-description-code	No change
			action-effect-severity-code	New attribute
ACTION-EVENT	reporting-data-id	ACTION-EVENT	reporting-data-id	No change
	action-eventid		action-eventid	No change

LC2/GH4 Edition 3.0 March 2000		LC2/GH5 Edition 5.0 March 2002		Comment
Entity Name	Attribute Name	Entity Name	Attribute Name	
	action-event-category-code		action-event-category-code	GH4 subcategory code becomes GH5 category code
	action-event-subcategory-code			Attribute deleted
		ACTION-EVENT-DETAIL		New entity
			action-event-id action-event-detail-index	Existing attribute becomes FK New attribute
			action-event-detail-classification-code	New attribute
			action-event-detail-crime-classification-code	New attribute
			action-event-detail-text	New attribute
			reporting-data-id	Existing attribute becomes FK
ACTION-EVENT-STATUS	action-event-id	ACTION-EVENT-STATUS	action-event-id	New Entity definition
	action-event-status-index		action-event-status-index	No change
	action-event-status-completion-fraction		action-event-status-completion-fraction	New Attribute definition
	reporting-data-id		reporting-data-id	No change
ACTION-FUNCTIONAL-ASSOCIATION	action-functional-association-subject-action-id	ACTION-FUNCTIONAL-ASSOCIATION	action-functional-association-subject-action-id	No change
	action-functional-association-object-action-id		action-functional-association-object-action-id	No change
	action-functional-association-index		action-functional-association-index	No change
	action-functional-association-category-code		action-functional-association-category-code	No change
ACTION-OBJECTIVE	action-id	ACTION-OBJECTIVE	action-id	No change
	action-objective-index		action-objective-index	No change
	action-objective-category-code		action-objective-category-code	No change
	action-objective-qualifier-code		action-objective-qualifier-code	No change
	action-objective-priority-code		action-objective-priority-code	No change
ACTION-OBJECTIVE-ITEM	action-objective-authorising-organisation-id	ACTION-OBJECTIVE-ITEM	action-objective-authorising-organisation-id	New Attribute definition
	action-id		action-id	No change
	action-objective-index		action-objective-index	No change
	action-objective-item-category-code		action-objective-item-category-code	No change
	candidate-target-list-id		candidate-target-list-id	No change
	candidate-target-detail-index		candidate-target-detail-index	No change
	object-item-id		object-item-id	No change
ACTION-OBJECTIVE-TYPE	action-id	ACTION-OBJECTIVE-TYPE	action-id	No change

LC2/GH4 Edition 3.0 March 2000		LC2/GH5 Edition 5.0 March 2002		Comment
Entity Name	Attribute Name	Entity Name	Attribute Name	
	action-objective-index		action-objective-index	No change
	candidate-target-list-id		candidate-target-list-id	No change
	candidate-target-detail-index		candidate-target-detail-index	No change
	object-type-id		object-type-id	No change
ACTION-REQUIRED-CAPABILITY	action-id	ACTION-REQUIRED-CAPABILITY	action-id	No change
	capability-id		capability-id	No change
	action-required-capability-quantity		action-required-capability-quantity	No change
ACTION-RESOURCE	action-id	ACTION-RESOURCE	action-id	No change
	action-resource-index		action-resource-index	No change
	action-resource-category-code		action-resource-category-code	No change
	action-resource-criticality-indicator-code		action-resource-criticality-indicator-code	No change
	action-resource-qualifier-code		action-resource-qualifier-code	No change
	action-resource-authorising-organisation-id		action-resource-authorising-organisation-id	No change
ACTION-RESOURCE-EMPLOYMENT	action-id	ACTION-RESOURCE-EMPLOYMENT	action-id	No change
	action-resource-index		action-resource-index	No change
	action-resource-employment-category-code		action-resource-employment-category-code	No change
			action-resource-employment-azimuth-fire-angle	New attribute
	action-resource-employment-method-of-control-code		action-resource-employment-method-of-control-code	No change
	action-objective-index		action-objective-index	No change
	action-objective-id		action-objective-id	No change
ACTION-RESOURCE-ITEM	action-id	ACTION-RESOURCE-ITEM	action-id	No change
	action-resource-index		action-resource-index	No change
	object-item-id		object-item-id	No change
ACTION-RESOURCE-TYPE	action-id	ACTION-RESOURCE-TYPE	action-id	No change
	action-resource-index		action-resource-index	No change
	action-resource-type-quantity		action-resource-type-quantity	No change
	object-type-id		action-resource-type-apportionment-fraction	New attribute

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			object-type-id	No change
ACTION-RULE-OF-ENGAGEMENT		ACTION-TASK-RULE-OF-ENGAGEMENT		New Entity name and definition
	action-id		action-task-id	Relationship moved from ACTION to ACTION-TASK Change of foreign keys
	rule-of-engagement-id		rule-of-engagement-id	No change
ACTION-TASK	action-task-id	ACTION-TASK	action-task-id	No change
	action-task-category-code		action-task-category-code	No change
	action-task-minimum-duration		action-task-minimum-duration	No change
	action-task-estimated-duration		action-task-estimated-duration	No change
	action-task-maximum-duration		action-task-maximum-duration	No change
	action-task-planned-start-date		action-task-planned-start-date	No change
	action-task-planned-start-time		action-task-planned-start-time	No change
	action-task-start-precision-code		action-task-start-precision-code	No change
	action-task-start-qualifier-code		action-task-start-qualifier-code	No change
	action-task-planned-end-date		action-task-planned-end-date	No change
	action-task-planned-end-time		action-task-planned-end-time	No change
	action-task-end-precision-code		action-task-end-precision-code	No change
	action-task-end-qualifier-code		action-task-end-qualifier-code	No change
	action-task-priority-code		action-task-priority-code	No change
	action-task-verb-phrase-code		action-task-verb-phrase-code	No change
			action-task-detail-text	New attribute
	candidate-target-list-id		candidate-target-list-id	No change
ACTION-TASK-STATUS	action-task-id	ACTION-TASK-STATUS	action-task-id	New entity definition
	action-task-status-index		action-task-status-index	No change
	action-task-status-category-code		action-task-status-category-code	No change
	action-task-status-completion-fraction		action-task-status-completion-fraction	No change
	action-task-status-planning-indicator-code		action-task-status-planning-indicator-code	No change
	action-task-status-progress-code		action-task-status-progress-code	No change
	action-task-status-timing-code		action-task-status-timing-code	No change
	reporting-data-id		reporting-data-id	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
ACTION - TEMPORAL - ASSOCIATION	action-temporal-association-subject-action-id	ACTION - TEMPORAL - ASSOCIATION	action-temporal-association-subject-action-id	No change
	action-temporal-association-object-action-id		action-temporal-association-object-action-id	No change
	action-temporal-association-index		action-temporal-association-index	No change
	action-temporal-association-category-code action-temporal-association-reference-duration		action-temporal-association-category-code action-temporal-association-reference-duration	No change No change
		ADDRESS-POSTAL	object-item-id	New structure
			object-item-access-index	New structure
			address-postal-category-code	New structure
			address-postal-line-1-text	New structure
			address-postal-line-2-text	New structure
			address-postal-line-3-text	New structure
			address-postal-line-4-text	New structure
			address-postal-postal-code-text	New structure
			address-postal-geographic-text	New structure
		AIRCRAFT-TYPE	aircraft-type-id	New structure
			aircraft-type-category-code	New structure
			aircraft-type-subcategory-code	New structure
		AIRFIELD	airfield-id	New structure
			airfield-air-traffic-control-presence-indicator-code	New structure
			airfield-hangar-area-dimension	New structure
			airfield-instrumentLanding-system-presence-indicator-code	New structure
			airfield-parking-area-dimension	New structure
			airfield-runway-lighting-presence-indicator-code	New structure
			airfield-runway-maximum-length-dimension	New structure
			airfield-runway-surface-type-code	New structure
		AMMUNITION-TYPE	ammunition-type-id	New structure
			ammunition-type-category-code	New structure
			ammunition-type-calibre-code	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
ATMOSPHERE	atmosphere-id	ATMOSPHERE	atmosphere-id	No change
	atmosphere-humidity-fraction		atmosphere-humidity-fraction	No change
	atmosphere-pressure-rate		atmosphere-pressure-rate	No change
	atmosphere-pressure-system-category-code		atmosphere-pressure-system-category-code	No change
	atmosphere-temperature		atmosphere-temperature	No change
	atmosphere-temperature-gradient-code		atmosphere-temperature-gradient-code	No change
		BIOLOGICAL-AGENT-TYPE	biological-agent-type-id	New structure
			biological-agent-type-category-code	New structure
			biological-agent-type-subcategory-code	New structure
			biological-agent-type-identification-number-text	New structure
			biological-agent-type-persistency-code	New structure
BRIDGE	bridge-id	BRIDGE	bridge-id	No change
	bridge-military-load-classification-one-way-tracked-code			Attribute deleted
	bridge-military-load-classification-one-way-wheeled-code			Attribute deleted
	bridge-military-load-classification-two-way-tracked-code			Attribute deleted
	bridge-military-load-classification-two-way-wheeled-code			Attribute deleted
			bridge-longest-span-length-dimension	New attribute
			bridge-span-quantity	New attribute
			bridge-usage-code	New attribute
		BRIDGE-TYPE	bridge-type-id	New structure
			bridge-type-category-code	New structure
CANDIDATE-TARGET-DETAIL	candidate-target-list-id	CANDIDATE-TARGET-DETAIL	candidate-target-list-id	No change
	candidate-target-detail-index		candidate-target-detail-index	No change
	candidate-target-detail-discriminator-code		candidate-target-detail-discriminator-code	No change
	candidate-target-detail-focus-type-code		candidate-target-detail-focus-type-code	No change
	candidate-target-detail-label-text		candidate-target-detail-label-text	No change
	candidate-target-detail-priority-quantity		candidate-target-detail-priority-quantity	No change



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Entity Name	Attribute Name	Entity Name	Attribute Name	
	candidate-target-detail-scheme-code		candidate-target-detail-scheme-code	No change
CANDIDATE-TARGET-DETAIL-ASSOCIATION	candidate-target-detail-association-subject-candidate-target-list-id	CANDIDATE-TARGET-DETAIL-ASSOCIATION	candidate-target-detail-association-subject-candidate-target-list-id	No change
	candidate-target-detail-association-subject-candidate-target-detail-index		candidate-target-detail-association-subject-candidate-target-detail-index	No change
	candidate-target-detail-association-object-candidate-target-list-id		candidate-target-detail-association-object-candidate-target-list-id	No change
	candidate-target-detail-association-object-candidate-target-detail-index		candidate-target-detail-association-object-candidate-target-detail-index	No change
CANDIDATE-TARGET-DETAIL-AUTHORISATION	candidate-target-detail-association-category-code	CANDIDATE-TARGET-DETAIL-AUTHORISATION	candidate-target-detail-association-category-code	No change
	candidate-target-list-id		candidate-target-list-id	No change
	candidate-target-detail-index		candidate-target-detail-index	No change
	candidate-target-detail-authorisation-index		candidate-target-detail-authorisation-index	No change
	candidate-target-detail-authorisation-approval-code		candidate-target-detail-authorisation-approval-code	No change
	candidate-target-detail-authorisation-priority-quantity		candidate-target-detail-authorisation-priority-quantity	No change
	reporting-data-id		reporting-data-id	No change
CANDIDATE-TARGET-DETAIL-ITEM	candidate-target-list-id	CANDIDATE-TARGET-DETAIL-ITEM	candidate-target-list-id	No change
	candidate-target-detail-index		candidate-target-detail-index	No change
	object-item-id		object-item-id	No change
CANDIDATE-TARGET-DETAIL-TYPE	candidate-target-list-id	CANDIDATE-TARGET-DETAIL-TYPE	candidate-target-list-id	No change
	candidate-target-detail-index		candidate-target-detail-index	No change
	object-type-id		object-type-id	No change
CANDIDATE-TARGET-LIST	candidate-target-list-id	CANDIDATE-TARGET-LIST	candidate-target-list-id	No change
	candidate-target-list-name		candidate-target-list-name	No change
	reporting-data-id		reporting-data-id	No change
CANDIDATE-TARGET-LIST-ASSOCIATION	candidate-target-list-association-subject-candidate-target-list-id	CANDIDATE-TARGET-LIST-ASSOCIATION	candidate-target-list-association-subject-candidate-target-list-id	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	candidate-target-list-association-object-candidate-target-list-id		candidate-target-list-association-object-candidate-target-list-id	No change
	candidate-target-list-association-category-code		candidate-target-list-association-category-code	No change
CANDIDATE-TARGET-LIST-AUTHORISATION	candidate-target-list-id	CANDIDATE-TARGET-LIST-AUTHORISATION	candidate-target-list-id	No change
	candidate-target-list-authorisation-index		candidate-target-list-authorisation-index	No change
	candidate-target-list-authorisation-indicator-code		candidate-target-list-authorisation-indicator-code	No change
	candidate-target-list-authorisation-priority-quantity		candidate-target-list-authorisation-priority-quantity	No change
	reporting-data-id		reporting-data-id	No change
CAPABILITY	capability-id	CAPABILITY	capability-id	No change
	capability-category-code		capability-category-code	No change
	capability-subcategory-code		capability-subcategory-code	No change
	capability-day-night-code		capability-day-night-code	No change
	capability-unit-of-measure-code		capability-unit-of-measure-code	No change
		CHEMICAL-AGENT-TYPE	chemical-agent-type-id	New structure
			chemical-agent-type-category-code	New structure
			chemical-agent-type-subcategory-code	New structure
			chemical-agent-type-identification-number-text	New structure
			chemical-agent-type-persistency-code	New structure
		CIVILIAN-POST-TYPE	civilian-post-type-id	New structure
			civilian-post-type-category-code	New structure
CLOUD-COVER	cloud-cover-id	CLOUD-COVER	cloud-cover-id	No change
	cloud-cover-category-code		cloud-cover-category-code	No change
	cloud-cover-base-dimension		cloud-cover-base-dimension	No change
	cloud-cover-average-coverage-code		cloud-cover-average-coverage-code	No change
	cloud-cover-light-refraction-fraction		cloud-cover-light-refraction-fraction	No change
COMBAT-UNIT-TYPE				ENTITY DELETED
	combat-unit-type-id			Attribute deleted
	combat-unit-type-category-code			Values transferred to unit-type-category-code

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	<del>combat</del> unit-type-arm-code			Values transferred to unit-type-arm-category-code
CONE-VOLUME	cone-volume-id	CONE-VOLUME	cone-volume-id	No change
			cone-volume-defining-surface-id	New FK due to re-design of LOCATION
	cone-volume-vertex-point-id		cone-volume-vertex-point-id	No change
CONSUMABLE-MATERIEL-TYPE	consumable-materiel-type-id	CONSUMABLE-MATERIEL-TYPE	consumable-materiel-type-id	New Entity definition
	consumable-materiel-type-category-code		consumable-materiel-type-category-code	No change
	consumable-materiel-type-subcategory-code		consumable-materiel-type-subcategory-code	No change
	consumable-materiel-type-hazard-code		consumable-materiel-type-hazard-code	No change
	consumable-materiel-type-issuing-element-code		consumable-materiel-type-issuing-element-code	No change
	consumable-materiel-type-issuing-quantity		consumable-materiel-type-issuing-quantity	No change
	consumable-materiel-type-issuing-unit-of-measure-code		consumable-materiel-type-issuing-unit-of-measure-code	No change
	consumable-materiel-type-issuing-height-dimension		consumable-materiel-type-issuing-height-dimension	No change
	consumable-materiel-type-issuing-length-dimension		consumable-materiel-type-issuing-length-dimension	No change
	consumable-materiel-type-issuing-width-dimension		consumable-materiel-type-issuing-width-dimension	No change
	consumable-materiel-type-issuing-weight-quantity		consumable-materiel-type-issuing-weight-quantity	No change
	consumable-materiel-type-perishability-indicator-code		consumable-materiel-type-perishability-indicator-code	No change
CONTEXT	context-id	CONTEXT	context-id	No change
	context-name		context-name	No change
CONTEXT-ASSESSMENT	context-id	CONTEXT-ASSESSMENT	context-id	No change
	context-assessment-index		context-assessment-index	No change
	context-assessment-text		context-assessment-text	No change
	context-assessment-effective-date		context-assessment-effective-date	No change
	context-assessment-effective-time		context-assessment-effective-time	No change
	context-assessing-organisation-id		context-assessing-organisation-id	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
CONTEXT - ELEMENT	context-id	CONTEXT - ELEMENT	context-id	No change
	context-elementindex		context-elementindex	No change
	reporting-data-id		reporting-data-id	No change
CONTEXT - OBJECT - ITEM - ASSOCIATION	context-id	CONTEXT - OBJECT - ITEM - ASSOCIATION	context-id	No change
	object-item-id		object-item-id	No change
CONTEXT - REPORTING - DATA - ASSOCIATION	context-id	CONTEXT - REPORTING - DATA - ASSOCIATION	context-id	No change
	reporting-data-id		reporting-data-id	No change
	context-reporting-data-association-index		context-reporting-data-association-index	No change
	context-reporting-data-association-category-code		context-reporting-data-association-category-code	No change
CONTROL - FEATURE	control-feature-id	CONTROL - FEATURE	control-feature-id	No change
	control-feature-category-code		control-feature-category-code	No change
CONTROL - FEATURE - CONTROL - FEATURE - ASSOCIATION	control-feature-control-feature-association-subject-control-feature-id	CONTROL - FEATURE - CONTROL - FEATURE - ASSOCIATION	control-feature-control-feature-association-subject-control-feature-id	New Entity definition
	control-feature-control-feature-association-object-control-feature-id		control-feature-control-feature-association-object-control-feature-id	No change
	control-feature-control-feature-association-index		control-feature-control-feature-association-index	No change
	control-feature-control-feature-association-category-code		control-feature-control-feature-association-category-code	No change
CONTROL - FEATURE - CONTROL - FEATURE - ASSOCIATION - STATUS	control-feature-control-feature-association-subject-control-feature-id	CONTROL - FEATURE - CONTROL - FEATURE - ASSOCIATION - STATUS	control-feature-control-feature-association-subject-control-feature-id	No change
	control-feature-control-feature-association-object-control-feature-id		control-feature-control-feature-association-object-control-feature-id	No change
	control-feature-control-feature-association-index		control-feature-control-feature-association-index	No change
			control-feature-control-feature-association-status-index	New key attribute
	control-feature-control-feature-association-status-category-code		control-feature-control-feature-association-status-category-code	No change
	reporting-data-id		reporting-data-id	Attribute moved from key to non-key

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Entity Name	Attribute Name	Entity Name	Attribute Name	
CONTROL -FEATURE- GEOGRAPHIC-FEATURE- ASSOCIATION	control-feature-geographic-feature-association- subject-control-feature-id	CONTROL-FEATURE- GEOGRAPHIC-FEATURE- ASSOCIATION	control-feature-geographic-feature- association-subject-control-feature-id	No change
	control-feature-geographic-feature-association- object-geographic-feature-id		control-feature-geographic-feature- association-object-geographic-feature-id	No change
	control-feature-geographic-feature-association- index		control-feature-geographic-feature- association-index	No change
	control-feature-geographic-feature-association- category-code		control-feature-geographic-feature- association-category-code	No change
CONTROL -FEATURE- GEOGRAPHIC-FEATURE- ASSOCIATION -STATUS	control-feature-geographic-feature-association- subject-control-feature-id	CONTROL-FEATURE- GEOGRAPHIC-FEATURE- ASSOCIATION-STATUS	control-feature-geographic-feature- association-subject-control-feature-id	New Entity definition
	control-feature-geographic-feature-association- object-geographic-feature-id		control-feature-geographic-feature- association-object-geographic-feature-id	No change
	control-feature-geographic-feature-association- index		control-feature-geographic-feature- association-index	No change
			control-feature-geographic-feature- association-status-index	New key attribute
	control-feature-geographic-feature-association- status-category-code		control-feature-geographic-feature- association-status-category-code	No change
	reporting-data-id		reporting-data-id	Attribute moved from key to non-key
CONTROL -FEATURE- STATUS	control-feature-status-id	CONTROL-FEATURE- STATUS	control-feature-status-id	No change
	object-item-status-index		object-item-status-index	No change
			control-feature-status-investigation-status- code	New attribute
	control-feature-status-usage-status-code		control-feature-status-security-status-code control-feature-status-usage-status-code	New attribute No change
CONTROL -FEATURE- TYPE	control-feature-type-id	CONTROL-FEATURE- TYPE	control-feature-type-id	No change
	control-feature-type-category-code		control-feature-type-category-code	No change
CONVOY	convoy-id	CONVOY	convoy-id	No change
	convoy-day-speed-rate		convoy-day-speed-rate	No change
	convoy-day-vehicle-gap-dimension		convoy-day-vehicle-gap-dimension	No change
	convoy-halt-duration		convoy-halt-duration	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	convoy-night-speed-rate		convoy-night-speed-rate	No change
	convoy-night-vehicle-gap-dimension		convoy-night-vehicle-gap-dimension	No change
	convoy-packet-gap-dimension		convoy-packet-gap-dimension	No change
	convoy-packet-size-quantity		convoy-packet-size-quantity	No change
		COORDINATE-SYSTEM	coordinate-system-id	New structure
			coordinate-system-reference-category-code	New structure
		CORRIDOR-AREA	corridor-area-id	New structure
			corridor-area-width-dimension	New structure
			corridor-area-centre-line-id	New structure
		ELECTRONIC-EQUIPMENT-TYPE	electronic-equipment-type-id	New structure
			electronic-equipment-type-category-code	New structure
			electronic-equipment-type-subcategory-code	New structure
ELEVATED-ABSOLUTE-POINT				Entity replaced by VERTICAL-DISTANCE
	elevated-absolute-point-id			Attribute deleted
	elevated-absolute-point-elevation-dimension			Attribute replaced by vertical-distance-dimension
		ELLIPSE	ellipse-id	New structure
			ellipse-centre-point-id	New structure
			ellipse-first-conjugate-diameter-point-id	New structure
			ellipse-second-conjugate-diameter-point-id	New structure
ENGINEERING-CAPABILITY	engineering-capability-id	ENGINEERING-CAPABILITY	engineering-capability-id	New Entity definition
	engineering-capability-facility-height-dimension		engineering-capability-facility-height-dimension	No change
	engineering-capability-facility-length-dimension		engineering-capability-facility-length-dimension	No change
	engineering-capability-facility-width-dimension		engineering-capability-facility-width-dimension	No change
	facility-type-id		facility-type-id	No change
		ENGINEERING-EQUIPMENT-TYPE	engineering-equipment-type-id	New structure
			engineering-equipment-type-category-code	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
EQUIPMENT-TYPE	equipment-type-id	EQUIPMENT-TYPE	equipment-type-id	No change
	equipment-type-category-code		equipment-type-category-code	No change
	equipment-type-subcategory-code			Attribute deleted
	equipment-type-fire-guidance-indicator-code			Attribute deleted; data represented in LAND – WEAPON-TYPE
	equipment-type-loaded-weight-quantity		equipment-type-loaded-weight-quantity	No change
	equipment-type-unloaded-weight-quantity		equipment-type-unloaded-weight-quantity	No change
	equipment-type-maximum-height-dimension		equipment-type-maximum-height-dimension	No change
	equipment-type-maximum-length-dimension		equipment-type-maximum-length-dimension	No change
	equipment-type-maximum-width-dimension		equipment-type-maximum-width-dimension	No change
	equipment-type-military-load-classification-code			Attribute deleted; data represented in MOBILITY-CAPABILITY
	equipment-type-mobility-code	EXECUTIVE-MILITARY-ORGANISATION-TYPE	executive-military-organisation-type-id	Attribute deleted; data represented in MOBILITY-CAPABILITY New structure
			executive-military-organisation-type-category-code	New structure
FACILITY	facility-id	FACILITY	facility-id	No change
	facility-category-code		facility-category-code	No change
			facility-primary-construction-material-code	New attribute
FACILITY-FACILITY-ASSOCIATION	facility-facility-association-subject-facility-id	FACILITY-FACILITY-ASSOCIATION	facility-facility-association-subject-facility-id	No change
	facility-facility-association-object-facility-id		facility-facility-association-object-facility-id	No change
	facility-facility-association-index		facility-facility-association-index	No change
	facility-facility-association-category-code		facility-facility-association-category-code	No change
FACILITY-FACILITY-ASSOCIATION-STATUS	facility-facility-association-subject-facility-id	FACILITY-FACILITY-ASSOCIATION-STATUS	facility-facility-association-subject-facility-id	New Entity definition
	facility-facility-association-object-facility-id		facility-facility-association-object-facility-id	No change
	facility-facility-association-index		facility-facility-association-index	No change
	reporting-data-id		facility-facility-association-status-index	New key attribute

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	facility-facility-association-status-category-code		facility-facility-association-status-category-code	No change
			reporting-data-id	Attribute moved from key to non-key
FACILITY-FEATURE-ASSOCIATION	facility-feature-association-subject-facility-id	FACILITY-FEATURE-ASSOCIATION	facility-feature-association-subject-facility-id	No change
	facility-feature-association-object-feature-id		facility-feature-association-object-feature-id	No change
	facility-feature-association-index		facility-feature-association-index	No change
	facility-feature-association-category-code		facility-feature-association-category-code	No change
FACILITY-FEATURE-ASSOCIATION-STATUS	facility-feature-association-subject-facility-id	FACILITY-FEATURE-ASSOCIATION-STATUS	facility-feature-association-subject-facility-id	New Entity definition
	facility-feature-association-object-feature-id		facility-feature-association-object-feature-id	No change
	facility-feature-association-index		facility-feature-association-index	No change
			facility-feature-association-status-index	New key attribute
	facility-feature-association-status-category-code		facility-feature-association-status-category-code	No change
	reporting-data-id		reporting-data-id	Attribute moved from key to non-key
FACILITY-LOCATION				Entity generalised to OBJECT-ITEM-LOCATION
	facility-id			Attribute generalised to object-item-id
	location-id			No change
	facility-location-index			Attribute generalised to object-item-location-index
	facility-location-accuracy-quantity			Attribute generalised to object-item-accuracy-quantity
	reporting-data-id			No change
FACILITY-STATUS	facility-status-id	FACILITY-STATUS	facility-status-id	No change
	object-item-status-index		object-item-status-index	No change
			facility-status-category-code	New attribute
			facility-status-demolition-status-code	New attribute
			facility-status-mine-presence-code	New attribute
			facility-status-occupation-program-indicator-code	New attribute



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Entity Name	Attribute Name	Entity Name	Attribute Name	
	facility-status-operational-status-code		facility-status-operational-status-code	No change
	facility-status-operational-status-qualifier-code		facility-status-operational-status-qualifier-code	No change
	facility-status-reserve-indicator-code		facility-status-reserve-indicator-code	No change
	facility-status-usage-status-code		facility-status-security-status-code facility-status-usage-status-code	New attribute No change
FACILITY-TYPE	facility-type-id	FACILITY-TYPE	facility-type-id	No change
	facility-type-category-code		facility-type-category-code	No change
FAN-AREA	fan-area-id	FAN-AREA	fan-area-id	No change
	fan-area-minimum-range-dimension		fan-area-minimum-range-dimension	No change
	fan-area-maximum-range-dimension		fan-area-maximum-range-dimension	No change
	fan-area-orientation-angle		fan-area-orientation-angle	No change
	fan-area-sector-size-angle		fan-area-sector-size-angle	No change
			fan-area-vertex-point-id	New attribute
FEATURE	feature-id	FEATURE	feature-id	No change
	feature-category-code		feature-category-code	No change
FEATURE-LOCATION				Entity generalised to OBJECT-ITEM-LOCATION
	feature-id			Attribute generalised to object-item-id
	location-id			No change
	feature-location-index			Attribute generalised to object-item-location-index
	feature-location-accuracy-quantity			Attribute generalised to object-item-accuracy-quantity
	reporting-data-id			No change
FEATURE-TYPE	feature-type-id	FEATURE-TYPE	feature-type-id	No change
	feature-type-category-code		feature-type-category-code	No change
FIRE-CAPABILITY	fire-capability-id	FIRE-CAPABILITY	fire-capability-id	New Entity definition
	consumable-materiel-type-id		ammunition-type-id	FK replaced by a more specific attribute in the new structure
GEOGRAPHIC-FEATURE	geographic-feature-id	GEOGRAPHIC-FEATURE	geographic-feature-id	No change
GEOGRAPHIC-FEATURE-STATUS	geographic-feature-status-id	GEOGRAPHIC-FEATURE-STATUS	geographic-feature-status-id	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	object-item -status-index		object-item -status-index	No change
	geographic-feature-status -code		geographic-feature-status-code	No change
			geographic-feature-status -demolition-status -code	New attribute
			geographic-feature-status-mine-presence-code	New attribute
			geographic-feature-status-recirculation-indicator-code	New attribute
	geographic-feature-status -surface-condition-code		geographic-feature-status -surface-condition-code	No change
			geographic-feature-status -surface-firmness-code	New attribute
GEOGRAPHIC-FEATURE-TYPE	geographic-feature-type-id	GEOGRAPHIC-FEATURE-TYPE	geographic-feature-type-id	No change
	geographic-feature-type-category-code		geographic-feature-type-category-code	No change
GEOMETRIC-VOLUME	geometric-volume-id	GEOMETRIC-VOLUME	geometric-volume-id	No change
	geometric-volume-category-code		geometric-volume-category-code	No change
	geometric-volume-lower-level-elevation-dimension		geometric-volume-lower-vertical-distance-id	Native attribute replaced by FK due to re-design of LOCATION
	geometric-volume-upper-level-elevation-dimension		geometric-volume-upper-vertical-distance-id	Native attribute replaced by FK due to re-design of LOCATION
GEOMETRIC-VOLUME-SURFACE				Entity replaced by subtype VOLUME-SURFACE of GEOMETRIC-VOLUME
	geometric-volume-id			No change
	surface-id			Attribute role-named surface - volume-defining-surface -id
		GOVERNMENT-ORGANISATION-TYPE	government-organisation-type-id	New structure
			government-organisation-type-category-code	New structure
			government-organisation-type-main-activity-code	New structure
		GROUP-ORGANISATION-TYPE	group-organisation-type-id	New structure
			group-organisation-type-category-code	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
HEADQUARTERS-UNIT-TYPE				ENTITY DELETED, functionality moved to UNIT-TYPE
	headquarters-unit-type-id			Attribute deleted
	headquarters-unit-type-subject-unit-type-id			Concept generalised in unit-type-supported-military-organisation-type-id
HOLDING	object-item-id	HOLDING	object-item-id	No change
	object-type-id		object-type-id	No change
	holding-index		holding-index	No change
	holding-operational-quantity		holding-operational-quantity	No change
	holding-total-quantity		holding-total-quantity	No change
	reporting-data-id		reporting-data-id	No change
ICING	icing-id	ICING	icing-id	No change
	icing-category-code		icing-category-code	No change
	icing-severity-qualifier-code		icing-severity-qualifier-code	No change
LAND-MANOEUVRE-CAPABILITY				Entity replaced by MOBILITY-CAPABILITY
	land-manoeuvre-capability-id			Attribute replaced by mobility-capability-id
	land-manoeuvre-capability-terrain-type-code			Attribute replaced by mobility-capability-terrain-type-code
		LAND-WEAPON-TYPE	land-weapon-type-id	New structure
			land-weapon-type-category-code	New structure
			land-weapon-type-subcategory-code	New structure
			land-weapon-type-calibre-code	New structure
			land-weapon-type-fire-guidance-indicator-code	New structure
LIGHT	light-id	LIGHT	light-id	No change
	light-category-code		light-category-code	No change
	light-up-time		light-up-time	No change
	light-down-time		light-down-time	No change
	light-moon-phase-code		light-moon-phase-code	No change
LINE	line-id	LINE	line-id	No change
LINE-POINT	line-id	LINE-POINT	line-id	New entity definition

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	line-point-index		line-point-index	No change
	line-point-sequence-quantity		line-point-sequence-quantity	No change
	line-point-point-id		line-point-point-id	No change
LOCATION	location-id	LOCATION	location-id	New entity definition
	location-category-code		location-category-code	No change
LOGICAL-NETWORK				ENTITY DELETED, functionality moved to NETWORK
	logical-network-id			Attribute replaced by network-id
	logical-network-category-code			Attribute replaced by network-category-code
	logical-network-minimum-capacity-quantity			Attribute replaced by network-minimum-capacity-quantity
	logical-network-security-classification-code			Attribute replaced by network-security-classification-code
LOGICAL-NETWORK-SERVICE				ENTITY DELETED, functionality moved to NETWORK-SERVICE
	logical-network-id			Attribute replaced by network-id
	logical-network-service-index			Attribute replaced by network-service-index
	logical-network-service-category-code			Attribute replaced by network-service-category-code
LOGICAL-NODE				ENTITY DELETED
	logical-node-id			Attribute deleted
	logical-node-participating-code			Attribute deleted
		MASS-GRAVE	mass-grave-id	New structure
		MASS-GRAVE-CONTENT	mass-grave-id	New structure
			mass-grave-content-index	New structure
			mass-grave-content-gender-code	New structure
			mass-grave-content-age-code	New structure
			mass-grave-content-quantity	New structure
MATERIEL	materiel-id	MATERIEL	materiel-id	No change
	materiel-serial-number-identification-text		materiel-serial-number-identification-text	No change
	materiel-lot-identification-text		materiel-lot-identification-text	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	materiel-alternate-identification-text			Attribute generalised to object-item-alternated-identification-text
			materiel-body-colour-code	New attribute
			materiel-marking-code	New attribute
			materiel-marking-colour-code	New attribute
MATERIEL-MATERIEL-TYPE-ESTABLISHMENT	materiel-id	MATERIEL-MATERIEL-TYPE-ESTABLISHMENT	materiel-id	No change
	established-materiel-type-id		established-materiel-type-id	No change
	materiel-type-establishment-index		materiel-type-establishment-index	No change
	materiel-materiel-type-establishment-index		materiel-materiel-type-establishment-index	No change
	materiel-materiel-type-establishment-effective-date		materiel-materiel-type-establishment-effective-date	No change
MATERIEL-POINT				Entity generalised to OBJECT-ITEM-LOCATION
	materiel-id			Attribute generalised to object-item-id
	point-id			No change
	materiel-point-index			Attribute generalised to object-item-location-index
	materiel-point-accuracy-quantity			Attribute generalised to object-item-accuracy-quantity
	materiel-point-bearing-angle			Attribute generalised to object-item-location-bearing-angle
	materiel-point-speed-rate			Attribute generalised to object-item-location-speed-rate
	reporting-data-id			No change
MATERIEL-STATUS	materiel-status-id	MATERIEL-STATUS	materiel-status-id	No change
	object-item-status-index		object-item-status-index	No change
			materiel-status-category-code	New attribute
			materiel-status-demolition-status-code	New attribute
	materiel-status-operational-status-code		materiel-status-operational-status-code	No change
	materiel-status-operational-status-qualifier-code		materiel-status-operational-status-qualifier-code	No change
	materiel-status-operational-status-mode-code		materiel-status-operational-status-mode-code	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			code	
	materiel -status -reserve -indicator -code		materiel -status -reserve -indicator -code	No change
			<a href="#">materiel -status -safety -status -code</a>	New attribute
MATERIEL -TYPE	materiel -status -usage -status -code	MATERIEL -TYPE	materiel -status -usage -status -code	No change
	materiel -type -id		materiel -type -id	No change
	materiel -type -category -code		materiel -type -category -code	No change
			<a href="#">materiel -type -reportable -item -text</a>	New attribute
	materiel -type -stock -number -text		materiel -type -stock -number -text	No change
			<a href="#">materiel -type -supply -class -code</a>	New attribute
MATERIEL -TYPE -ESTABLISHMENT	established -materiel -type -id	MATERIEL -TYPE -ESTABLISHMENT	established -materiel -type -id	No change
	materiel -type -establishment -index		materiel -type -establishment -index	No change
	materiel -type -establishment -category -code		materiel -type -establishment -category -code	No change
	materiel -type -establishment -effective -date		materiel -type -establishment -effective -date	No change
	materiel -type -establishment -environment -condition -code		materiel -type -establishment -environment -condition -code	No change
	materiel -type -establishment -name		materiel -type -establishment -name	No change
MATERIEL -TYPE -ESTABLISHMENT -MATERIEL -TYPE -DETAIL	established -materiel -type -id	MATERIEL -TYPE -ESTABLISHMENT -MATERIEL -TYPE -DETAIL	established -materiel -type -id	No change
	materiel -type -establishment -index		materiel -type -establishment -index	No change
	materiel -type -establishment -materiel -type -detail -materiel -type -id		materiel -type -establishment -materiel -type -detail -materiel -type -id	No change
	materiel -type -establishment -materiel -type -detail -major -part -indicator -code		materiel -type -establishment -materiel -type -detail -major -part -indicator -code	No change
	materiel -type -establishment -materiel -type -detail -quantity		materiel -type -establishment -materiel -type -detail -quantity	No change
		<a href="#">MEDICAL -FACILITY -STATUS</a>	<a href="#">materiel -type -establishment -detail -materiel -type -establishment -index</a>	New attribute
			<a href="#">medical -facility -status -facility -id</a>	New structure
			<a href="#">object -item -status -index</a>	New structure
			<a href="#">medical -facility -status -surgery -backlog -duration</a>	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
		MEDICAL-FACILITY- STATUS-CASUALTY-BED- OCCUPANCY	medical-facility-status -facility-id	New structure
			object-item-status -index	New structure
			medical-facility-status -casualty-bed- occupancy-index	New structure
			medical-facility-status -casualty-bed- occupancy-group-code	New structure
			medical-facility-status -casualty-bed- occupancy-quantity	New structure
		MEDICAL-FACILITY- STATUS-CASUALTY- EVACUATION	medical-facility-status -facility-id	New structure
			object-item-status -index	New structure
			medical-facility-status -casualty-evacuation- index	New structure
			medical-facility-status -casualty-evacuation- destination-code	New structure
			medical-facility-status -casualty-evacuation- sitting-quantity	New structure
			medical-facility-status -casualty-evacuation- stretcher-quantity	New structure
		MEDICAL-FACILITY- STATUS-INTERVAL- CASUALTY-GROUP	medical-facility-status -facility-id	New structure
			begin-object-item-status -index	New structure
			end-object-item -status-index	New structure
			medical-facility-status -interval-casualty- group-index	New structure
			medical-facility-status -interval-casualty- group-code	New structure
			medical-facility-status -interval-casualty- group-completed-surgery-quantity	New structure
			medical-facility-status -interval-casualty- group-death-quantity	New structure
		MEDICAL-FACILITY- STATUS-INTERVAL-	medical-facility-status -facility-id	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
		CASUALTY-TYPE		
			begin-object-item-status-index	New structure
			end-object-item-status-index	New structure
			medical-facility-status-interval-casualty-type-index	New structure
			medical-facility-status-interval-casualty-type-code	New structure
			medical-facility-status-interval-casualty-type-arrival-quantity	New structure
			medical-facility-status-interval-casualty-type-admitted-quantity	New structure
		MEDICAL-FACILITY-STATUS-INTERVAL-EVACUATION	medical-facility-status-facility-id	New structure
			begin-object-item-status-index	New structure
			end-object-item-status-index	New structure
			medical-facility-status-interval-evacuation-index	New structure
			medical-facility-status-interval-evacuation-destination-code	New structure
		MEDICAL-FACILITY-STATUS-PENDING-SURGERY	medical-facility-status-interval-evacuation-quantity	New structure
			medical-facility-status-facility-id	New structure
			object-item-status-index	New structure
			medical-facility-status-pending-surgery-index	New structure
			medical-facility-status-pending-surgery-triage-code	New structure
			medical-facility-status-pending-surgery-quantity	New structure
METEOROLOGIC - FEATURE	meteorologic-feature-id	METEOROLOGIC - FEATURE	meteorologic-feature-id	No change
	meteorologic-feature-category-code		meteorologic-feature-category-code	No change
	meteorologic-feature-interpretation-code		meteorologic-feature-interpretation-code	No change



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Entity Name	Attribute Name	Entity Name	Attribute Name	
	meteorologic-feature-probability-fraction		meteorologic-feature-probability-fraction	No change
	meteorologic-feature-source-code		meteorologic-feature-source-code	No change
		MILITARY-ORGANISATION-TYPE	military-organisation-type-id	New structure
			military-organisation-type-category-code	New structure
			military-organisation-type-service-code	New structure
		MILITARY-POST-TYPE		Entity re-structured from POST-TYPE
			military-post-type-id	Attribute re-named
			military-post-type-category-code	Attribute re-named
			military-post-type-rank-code	Attribute re-named
MINEFIELD	minefield-id	MINEFIELD	minefield-id	No change
			minefield-depth-placement-code	New attribute
	minefield-mine-spacing-dimension		minefield-mine-spacing-dimension	No change
	minefield-pattern-code		minefield-pattern-code	No change
	minefield-persistence-code		minefield-persistence-code	No change
	minefield-purpose-code		minefield-purpose-code	No change
			minefield-stopping-power-code	New attribute
		MISCELLANEOUS-EQUIPMENT-TYPE	miscellaneous-equipment-type-id	New structure
			miscellaneous-equipment-type-category-code	New structure
		MISSION-CAPABILITY	mission-capability-id	New structure
			mission-capability-category-code	New structure
			mission-capability-level-code	New structure
			mission-capability-qualifier-code	New structure
		MOBILITY-CAPABILITY	mobility-capability-id	New structure
			mobility-capability-category-code	New structure
			mobility-capability-terrain-type-code	New structure
		NBC-EQUIPMENT-TYPE	nbc-equipment-type-id	New structure
			nbc-equipment-type-category-code	New structure
		NBC-EVENT	nbc-event-id	New structure
			nbc-event-category-code	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			<a href="#">nbc-eventsubcategory-code</a>	New structure
			<a href="#">nbc-eventalarm-result-indicator-code</a>	New structure
			<a href="#">nbc-eventconfirmation-test-indicator-code</a>	New structure
			<a href="#">nbc-eventdose-rate-quantity</a>	New structure
			<a href="#">nbc-eventdose-rate-trend-code</a>	New structure
			<a href="#">nbc-eventflash-to-bang-time</a>	New structure
			<a href="#">nbc-eventrelease-code</a>	New structure
			<a href="#">nbc-eventspill-size-code</a>	New structure
			<a href="#">nbc-eventyield-group-code</a>	New structure
		NETWORK		New structure, see LOGICAL-NETWORK in GH4
			<a href="#">network-id</a>	New structure
			<a href="#">network-category-code</a>	New structure
			<a href="#">network-cryptographic-indicator-code</a>	New structure
			<a href="#">network-cryptographic-plan-short-title-text</a>	New structure
			<a href="#">network-cryptographic-code-short-title-text</a>	New structure
			<a href="#">network-frequency-band-code</a>	New structure
			<a href="#">network-frequency-channel-number-quantity</a>	New structure
			<a href="#">network-maximum-capacity-quantity</a>	New structure
			<a href="#">network-minimum-capacity-quantity</a>	New structure
			<a href="#">network-modulation-code</a>	New structure
			<a href="#">network-security-classification-code</a>	New structure
			<a href="#">network-security-classification-caveat-text</a>	New structure
			<a href="#">network-security-policy-code</a>	New structure
		NETWORK-FREQUENCY	<a href="#">network-id</a>	New structure
			<a href="#">network-frequency-index</a>	New structure
			<a href="#">network-frequency-discrete-frequency-quantity</a>	New structure
			<a href="#">network-frequency-band-lower-frequency-quantity</a>	New structure
			<a href="#">network-frequency-band-upper-frequency-quantity</a>	New structure
			<a href="#">network-frequency-effective-start-date</a>	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			network-frequency-effective-start-time	New structure
			network-frequency-effective-end-date	New structure
			network-frequency-effective-end-time	New structure
		NETWORK-SERVICE	network-id	New structure, see LOGICAL - NETWORK-SERVICE in GH4
			network-service-index	New structure
			network-service-category-code	New structure
		NETWORK-SERVICE-ACCESS	object-item-id	New structure
			object-item-access-index	New structure
			network-service-access-transmit-indicator-code	New structure
			network-service-access-call-sign-text	New structure
			network-service-access-text	New structure
			network-id	New structure
		NUCLEAR-AGENT-TYPE	network-service-index	New structure
			nuclear-agent-type-id	New structure
			nuclear-agent-type-category-code	New structure
			nuclear-agent-type-identification-number-text	New structure
			nuclear-agent-type-primary-radiation-code	New structure
OBJECT-ITEM	object-item-id	OBJECT-ITEM	object-item-id	No change
	object-item-category-code		object-item-category-code	No change
	object-item-name		object-item-name	No change
			object-item-alternate-identification-text	New attribute
		OBJECT-ITEM-ACCESS	object-item-id	New structure
			object-item-access-index	New structure
			object-item-access-category-code	New structure
			reporting-data-id	New structure
OBJECT-ITEM-ACTION-EFFECT	action-id	OBJECT-ITEM-ACTION-EFFECT	action-id	No change
	action-effect-index		action-effect-index	No change
	object-item-action-effect-fraction		object-item-action-effect-fraction	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	object-item-id		object-item-id	No change
OBJECT-ITEM-CAPABILITY	object-item-id	OBJECT-ITEM-CAPABILITY	object-item-id	No change
	capability-id		capability-id	No change
	object-item-capability-index		object-item-capability-index	No change
			object-item-capability-mission-primacy-code	New attribute
	object-item-capability-quantity		object-item-capability-quantity	No change
	reporting-data-id		reporting-data-id	No change
		OBJECT-ITEM-LOCATION		New structure, generalises FACILITY-LOCATION, FEATURE-LOCATION, MATERIEL-POINT, ORGANISATION-POINT, and PERSON-POINT
			location-id	New structure
			object-item-id	New structure
			object-item-location-index	New structure
			object-item-location-accuracy-quantity	New structure
			object-item-location-bearing-angle	New structure
			object-item-location-speed-rate	New structure
			object-item-location-geometry-defining-control-feature-type-id	New structure
OBJECT-ITEM-STATUS	object-item-id	OBJECT-ITEM-STATUS	reporting-data-id	New structure
	object-item-status-index		object-item-id	No change
	object-item-status-category-code		object-item-status-index	No change
	object-item-status-hostility-code		object-item-status-category-code	No change
			object-item-status-hostility-code	No change
			object-item-status-booby-trap-indicator-code	New attribute
	reporting-data-id		reporting-data-id	No change
OBJECT-ITEM-TYPE	object-item-id	OBJECT-ITEM-TYPE	object-item-id	No change
	object-type-id		object-type-id	No change
	object-item-type-index		object-item-type-index	No change
	reporting-data-id		reporting-data-id	No change
		OBJECT-REFERENCE	coordinate-system-id	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			object-reference-location-id	New structure
			object-reference-object-item-id	New structure
			object-reference-object-item-location-index	New structure
OBJECT-TYPE	object-type-id	OBJECT-TYPE	object-type-id	No change
	object-type-category-code		object-type-category-code	No change
	object-type-dummy-indicator-code		object-type-dummy-indicator-code	No change
	object-type-name		object-type-name	No change
	object-type-nationality-code		object-type-nationality-code	No change
OBJECT-TYPE-ACTION-EFFECT	action-id	OBJECT-TYPE-ACTION-EFFECT	action-id	No change
	action-effect-index		action-effect-index	No change
	object-type-action-effect-quantity		object-type-action-effect-quantity	No change
	object-type-id		object-type-id	No change
OBJECT-TYPE-CAPABILITY-NORM	object-type-id	OBJECT-TYPE-CAPABILITY-NORM	object-type-id	No change
	capability-id		capability-id	No change
			object-type-capability-norm-mission-primacy-code	New attribute
	object-type-capability-norm-quantity		object-type-capability-norm-quantity	No change
		ORBIT-AREA	orbit-area-id	New structure
			orbit-area-alignment-code	New structure
			orbit-area-width-dimension	New structure
			orbit-area-first-point-id	New structure
			orbit-area-second-point-id	New structure
ORGANISATION	organisation-id	ORGANISATION	organisation-id	No change
	organisation-category-code		organisation-category-code	No change
	organisation-nickname-name		organisation-nickname-name	No change
ORGANISATION-ACTION-TASK-ASSOCIATION		ORGANISATION-ACTION-ASSOCIATION		Relationship moved from ACTION-TASK to ACTION, entity re-named
	organisation-id		organisation-id	No change
	action-task-id		action-id	Attribute re-named
	organisation-action-task-association-index		organisation-action-association-index	Attribute re-named

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	organisation-action-task-association-category-code		organisation-action-association-category-code	Attribute re-named
	organisation-action-task-association-effective-date		organisation-action-association-effective-date	Attribute re-named
	organisation-action-task-association-effective-time		organisation-action-association-effective-time	Attribute re-named
	organisation-action-task-association-intent-text		organisation-action-association-intent-text	Attribute re-named
		ORGANISATION -ACTION -TASK-RULE-OF-ENGAGEMENT-STATUS	action-task-id	New structure
			rule-of-engagement-id	New structure
			organisation-id	New structure
			organisation-action-task-rule-of-engagement-status-index	New structure
			organisation-action-task-rule-of-engagement-category-code	New structure
			organisation-action-task-rule-of-engagement-status-effective-start-date	New structure
			organisation-action-task-rule-of-engagement-status-effective-start-time	New structure
			organisation-action-task-rule-of-engagement-status-effective-end-date	New structure
ORGANISATION-CONTROL-FEATURE-ASSOCIATION	organisation-control-feature-association -subject-organisation-id	ORGANISATION-CONTROL-FEATURE-ASSOCIATION	organisation-action-task-rule-of-engagement-status-effective-end-time	New structure
	organisation-control-feature-association -object-control-feature-id		organisation-control-feature-association-subject-organisation-id	No change
	organisation-control-feature-association-index		organisation-control-feature-association-object-control-feature-id	No change
	organisation-control-feature-association -category-code		organisation-control-feature-association-index	No change
ORGANISATION-CONTROL-FEATURE-ASSOCIATION-STATUS	organisation-control-feature-association -subject-organisation-id	ORGANISATION-CONTROL-FEATURE-ASSOCIATION-STATUS	organisation-control-feature-association-category-code	No change
			organisation-control-feature-association-subject-organisation-id	New Entity definition

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	organisation-control-feature-association-object-control-feature-id		organisation-control-feature-association-object-control-feature-id	No change
	organisation-control-feature-association-index		organisation-control-feature-association-index	No change
			organisation-control-feature-association-status-index	New key attribute
	organisation-control-feature-association-status-category-code		organisation-control-feature-association-status-category-code	No change
	reporting-data-id		reporting-data-id	Attribute moved from key to non-key
ORGANISATION-FACILITY-ASSOCIATION	organisation-facility-association-subject-organisation-id	ORGANISATION-FACILITY-ASSOCIATION	organisation-facility-association-subject-organisation-id	No change
	organisation-facility-association-object-facility-id		organisation-facility-association-object-facility-id	No change
	organisation-facility-association-index		organisation-facility-association-index	No change
	organisation-facility-association-category-code		organisation-facility-association-category-code	No change
ORGANISATION-FACILITY-ASSOCIATION-STATUS	organisation-facility-association-subject-organisation-id	ORGANISATION-FACILITY-ASSOCIATION-STATUS	organisation-facility-association-subject-organisation-id	New Entity definition
	organisation-facility-association-object-facility-id		organisation-facility-association-object-facility-id	No change
	organisation-facility-association-index		organisation-facility-association-index	No change
			organisation-facility-association-status-index	New key attribute
	organisation-facility-association-status-category-code		organisation-facility-association-status-category-code	No change
	reporting-data-id		reporting-data-id	Attribute moved from key to non-key
ORGANISATION-MATERIEL-ASSOCIATION	organisation-materiel-association-subject-organisation-id	ORGANISATION-MATERIEL-ASSOCIATION	organisation-materiel-association-subject-organisation-id	No change
	organisation-materiel-association-object-materiel-id		organisation-materiel-association-object-materiel-id	No change
	organisation-materiel-association-index		organisation-materiel-association-index	No change
	organisation-materiel-association-category-code		organisation-materiel-association-category-code	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
ORGANISATION-MATERIEL-ASSOCIATION-STATUS	organisation-materiel-association-subject-organisation-id	ORGANISATION-MATERIEL-ASSOCIATION-STATUS	organisation-materiel-association-subject-organisation-id	New Entity definition
	organisation-materiel-association-object-materiel-id		organisation-materiel-association-object-materiel-id	No change
	organisation-materiel-association-index		organisation-materiel-association-index	No change
			organisation-materiel-association-status-index	New key attribute
	organisation-materiel-association-status-category-code		organisation-materiel-association-status-category-code	No change
	reporting-data-id	ORGANISATION-MATERIEL-TYPE-ASSOCIATION	reporting-data-id organisation-id	Attribute moved from key to non-key New structure
			materiel-type-id	New structure
			organisation-materiel-type-association-assigned-land-forces-reportable-item-list-text	New structure
			organisation-materiel-type-association-assigned-land-forces-reportable-item-list-date	New structure
			organisation-materiel-type-association-assigned-land-forces-reportable-item-list-time	New structure
ORGANISATION-ORGANISATION-ASSOCIATION	organisation-organisation-association-subject-organisation-id	ORGANISATION-ORGANISATION-ASSOCIATION	organisation-organisation-association-subject-organisation-id	No change
	organisation-organisation-association-object-organisation-id		organisation-organisation-association-object-organisation-id	No change
	organisation-organisation-association-index		organisation-organisation-association-index	No change
	organisation-organisation-association-category-code		organisation-organisation-association-category-code	No change
	organisation-organisation-association-subcategory-code		organisation-organisation-association-subcategory-code	No change
	organisation-organisation-association-action-task-id		organisation-organisation-association-action-task-id	No change



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Entity Name	Attribute Name	Entity Name	Attribute Name	
ORGANISATION- ORGANISATION- ASSOCIATION -STATUS	organisation-organisation-association-subject- organisation-id	ORGANISATION- ORGANISATION- ASSOCIATION-STATUS	organisation-organisation-association- subject-organisation-id	New Entity definition
	organisation-organisation-association-object- organisation-id		organisation-organisation-association-object- organisation-id	No change
	organisation-organisation-association-index		organisation-organisation-association-index	No change
	reporting-data-id		organisation-organisation-association-status- index	New key attribute
	organisation-organisation-association-status - category-code		organisation-organisation-association-status - category-code	No change
ORGANISATION- ORGANISATION-TYPE- ESTABLISHMENT	organisation-id	ORGANISATION- ORGANISATION-TYPE- ESTABLISHMENT	reporting-data-id  organisation-id	Attribute moved from key to non-key No change
	established -organisation-type-id		established -organisation-type-id	No change
	organisation-type-establishment-index		organisation-type-establishment-index	No change
	organisation-organisation-type-establishment- index		organisation-organisation-type - establishment-index	No change
	organisation-organisation-type-establishment- effective-date		organisation-organisation-type - establishment-effective-date	No change
ORGANISATION -PERSON- ASSOCIATION	organisation-person-association-subject- organisation-id	ORGANISATION- PERSON-ASSOCIATION	organisation-person-association-subject- organisation-id	No change
	organisation-person-association-object-person-id		organisation-person-association-object- person-id	No change
	organisation-person-association-index		organisation-person-association-index	No change
	organisation-person-association-category-code		organisation-person-association-category- code	No change
ORGANISATION -PERSON- ASSOCIATION -STATUS	organisation-person-association-subject- organisation-id	ORGANISATION- PERSON-ASSOCIATION- STATUS	organisation-person-association-subject- organisation-id	New Entity definition
	organisation-person-association-object-person-id		organisation-person-association-object- person-id	No change
	organisation-person-association-index		organisation-person-association-index	No change
	reporting-data-id		organisation-person-association-status-index	New key attribute

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	organisation-person-association-status-category-code		organisation-person-association-status-category-code	No change
			reporting-data-id	Attribute moved from key to non-key
ORGANISATION-POINT				Entity generalised to OBJECT-ITEM-LOCATION
	organisation-id			Attribute generalised to object-item-id
	point-id			No change
	organisation-point-index			Attribute generalised to object-item-location-index
	organisation-point-accuracy-quantity			Attribute generalised to object-item-accuracy-quantity
	organisation-point-bearing-angle			Attribute generalised to object-item-location-bearing-angle
	organisation-point-speed-rate			Attribute generalised to object-item-location-speed-rate
	reporting-data-id			No change
ORGANISATION-STATUS	organisation-status-id	ORGANISATION-STATUS	organisation-status-id	No change
	object-item-status-index		object-item-status-index	No change
	organisation-status-operational-status-code		organisation-status-operational-status-code	No change
	organisation-status-operational-status-qualifier-code		organisation-status-operational-status-qualifier-code	No change
			organisation-status-availability-code	New attribute
			organisation-status-commitment-status-code	New attribute
	organisation-status-fire-mode-code		organisation-status-fire-mode-code	No change
			organisation-status-radiation-dose-code	New attribute
			organisation-status-readiness-code	New attribute
			organisation-status-alert-time-duration	New attribute
	organisation-status-reinforcement-code		organisation-status-reinforcement-code	No change
	organisation-status-reserve-indicator-code		organisation-status-reserve-indicator-code	No change
	organisation-status-usage-status-code		organisation-status-usage-status-code	No change
ORGANISATION-TYPE	organisation-type-id	ORGANISATION-TYPE	organisation-type-id	No change
	organisation-type-category-code		organisation-type-category-code	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			<a href="#">organisation-type-description-text</a>	New attribute
ORGANISATION-TYPE-ESTABLISHMENT	established-organisation-type-id	ORGANISATION-TYPE-ESTABLISHMENT	established-organisation-type-id	No change
	organisation-type-establishment-index		organisation-type-establishment-index	No change
	organisation-type-establishment-effective-date		organisation-type-establishment-effective-date	No change
	organisation-type-establishment-environment-condition-code		organisation-type-establishment-environment-condition-code	No change
	organisation-type-establishment-name		organisation-type-establishment-name	No change
	organisation-type-establishment-operational-mode-code		organisation-type-establishment-operational-mode-code	No change
ORGANISATION-TYPE-ESTABLISHMENT-MATERIEL-TYPE-DETAIL	established-organisation-type-id	ORGANISATION-TYPE-ESTABLISHMENT-MATERIEL-TYPE-DETAIL	established-organisation-type-id	No change
	organisation-type-establishment-index		organisation-type-establishment-index	No change
	organisation-type-establishment-materiel-type-detail-materiel-type-id		organisation-type-establishment-materiel-type-detail-materiel-type-id	No change
	organisation-type-establishment-materiel-type-detail-quantity		organisation-type-establishment-materiel-type-detail-quantity	No change
			<a href="#">organisation-type-establishment-detail-materiel-type-establishment-index</a>	New attribute
ORGANISATION-TYPE-ESTABLISHMENT-ORGANISATION-TYPE-DETAIL	established-organisation-type-id	ORGANISATION-TYPE-ESTABLISHMENT-ORGANISATION-TYPE-DETAIL	established-organisation-type-id	No change
	organisation-type-establishment-index		organisation-type-establishment-index	No change
	detail-organisation-type-id		detail-organisation-type-id	No change
	organisation-type-establishment-organisation-type-detail-quantity		organisation-type-establishment-organisation-type-detail-quantity	No change
			<a href="#">organisation-type-establishment-detail-organisation-type-establishment-index</a>	New attribute
ORGANISATION-TYPE-ESTABLISHMENT-PERSON-TYPE-DETAIL	established-organisation-type-id	ORGANISATION-TYPE-ESTABLISHMENT-PERSON-TYPE-DETAIL	established-organisation-type-id	No change
	organisation-type-establishment-index		organisation-type-establishment-index	No change
	detail-person-type-id		detail-person-type-id	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	organisation-type-establishment-person-type-detail-quantity		organisation-type-establishment-person-type-detail-quantity	No change
PERSON	person-id	PERSON	person-id	No change
	person-alternate-identification-text			Attribute generalised as object-item-alternate-identification-text
	person-birth-date		person-birth-date	No change
	person-blood-type-code		person-blood-type-code	No change
			person-ethnic-group-code	New attribute
	person-gender-code		person-gender-code	No change
	person-religion-code		person-religion-code	No change
		PERSON-IDENTIFICATION-DOCUMENT	person-id	New structure
			person-identification-document-index	New structure
			person-identification-document-code	New structure
			person-identification-document-number-text	New structure
PERSON-POINT	person-id			Entity generalised to OBJECT-ITEM-LOCATION
	person-id			Attribute generalised to object-item-id
	point-id			No change
	person-point-index			Attribute generalised to object-item-location-index
	person-point-accuracy-quantity			Attribute generalised to object-item-accuracy-quantity
	reporting-data-id			No change
PERSON-SKILL		PERSON-LANGUAGE-SKILL		Entity has been re-named to reflect its usage
	person-id		person-id	No change
	person-skill-index		person-language-skill-index	Attribute re-named
	person-skill-category-code		person-language-skill-category-code	Attribute re-named
	person-skill-proficiency-code		person-language-skill-general-proficiency-code	Attribute re-named
			person-language-skill-listening-proficiency-level-code	New attribute

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Entity Name	Attribute Name	Entity Name	Attribute Name	
			person-language-skill-reading-proficiency-level-code	New attribute
			person-language-skill-speaking-proficiency-level-code	New attribute
			person-language-skill-writing-proficiency-level-code	New attribute
		PERSON-MATERIEL-ASSOCIATION	person-materiel-association-subject-person-id	New structure
			person-materiel-association-object-materiel-id	New structure
			person-materiel-association-index	New structure
			person-materiel-association-category-code	New structure
		PERSON-MATERIEL-ASSOCIATION-STATUS	person-materiel-association-subject-person-id	New structure
			person-materiel-association-object-materiel-id	New structure
			person-materiel-association-index	New structure
			person-materiel-association-status-index	New structure
			person-materiel-association-status-category-code	New structure
			reporting-data-id	New structure
		PERSON-PERSON-ASSOCIATION	person-person-association-subject-person-id	New structure
			person-person-association-object-person-id	New structure
			person-person-association-index	New structure
			person-person-association-next-of-kin-category-code	New structure
		PERSON-PERSON-ASSOCIATION-STATUS	person-person-association-subject-person-id	New structure
			person-person-association-object-person-id	New structure
			person-person-association-index	New structure
			person-person-association-status-index	New structure
			person-person-association-status-category-code	New structure
			reporting-data-id	New structure

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Entity Name	Attribute Name	Entity Name	Attribute Name	
PERSON-STATUS	person-status-id	PERSON-STATUS	person-status-id	No change
	object-item -status-index		object-item -status -index	No change
	person-status -duty-status -code		person-status -duty-status -code	No change
	person-status-physical-status-code		person-status-physical-status-code	No change
			person-status -physical-status-qualifier-code	New attribute
			person-status-radiation-dose-code	New attribute
	person-status -reserve-indicator -code		person-status -reserve-indicator-code	No change
PERSON-TYPE	person-type-id	PERSON-TYPE	person-type-id	No change
	person-type -category-code		person-type -category-code	No change
			person-type-subcategory-code	New attribute
	person-type-rank-code		person-type -rank-code	No change
POINT	point-id	POINT	point-id	No change
	point-category-code		point-category-code	No change
	point-horizontal-precision-code			Attribute has been replaced by absolute-point-angular-precision-code
	point-vertical-precision-code			Attribute has been replaced by vertical-distance-precision-code
		POINTREFERENCE	coordinate-system-id	New structure
			point-reference-origin-point-id	New structure
			point-reference-x-vector-pointid	New structure
			point-reference-y-vector-pointid	New structure
		POLYARC-AREA	polyarc-area-id	New structure
			polyarc-area-begin-bearing-angle	New structure
			polyarc-area-end-bearing-angle	New structure
			polyarc-area-arc-radius-dimension	New structure
			polyarc-area-defining-line-id	New structure
			polyarc-area-bearing-origin-point-id	New structure
		POLYGON-AREA	polygon-area-id	New structure
			polygon-area-bounding-line-id	New structure
POST	post-id			Entity has been deleted; it had no data attributes

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Entity Name	Attribute Name	Entity Name	Attribute Name	
POST-TYPE	post-type-id			Entity has been re-named MILITARY-POST-TYPE
	post-type-category-code			Entity has been re-named MILITARY-POST-TYPE
	post-type-rank-code			Entity has been re-named MILITARY-POST-TYPE
PRECIPITATION	precipitation-id	PRECIPITATION	precipitation-id	No change
	precipitation-category-code		precipitation-category-code	No change
	precipitation-rate		precipitation-rate	No change
		PRIVATE-SECTOR-ORGANISATION-TYPE	private-sector-organisation-type-id	New structure
			private-sector-organisation-type-category-code	New structure
			private-sector-organisation-type-main-activity-code	New structure
		RAILCAR-TYPE	railcar-type-id	New structure
			railcar-type-category-code	New structure
			railcar-type-subcategory-code	New structure
			railcar-type-gauge-quantity	New structure
REFERENCE	reference-id	REFERENCE	reference-id	No change
	reference-format-code		reference-format-code	No change
	reference-identification-text		reference-description-text	New attribute name
	reference-security-classification-code		reference-security-classification-code	No change
	reference-source-text		reference-source-text	No change
	reference-transmittal-type-code		reference-transmittal-type-code	No change
REGULAR-AREA				Entity has been deleted; its functionality has been replaced by POLYGON-AREA for specifying rectangles and ELLIPSE for specifying ellipses.
	regular-area-id			Attributed deleted
	regular-area-category-code			Attributed deleted
	regular-area-major-dimension			Attributed deleted
	regular-area-minor-dimension			Attributed deleted

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	regular-area-orientation-angle			Attributed deleted
RELATIVE-POINT	relative-point-id	RELATIVE-POINT	relative-point-id	No change
	relative-point-elevation-offset-dimension			Attribute has been generalised to relative-point-z-coordinate-dimension
	relative-point-northing-offset-dimension			Attribute has been generalised to relative-point-y-coordinate-dimension
	relative-point-easting-offset-dimension			Attribute has been generalised to relative-point-x-coordinate-dimension
			relative-point-x-coordinate-dimension	New attribute
			relative-point-y-coordinate-dimension	New attribute
			relative-point-z-coordinate-dimension	New attribute
			relative-point-horizontal-precision-code	New attribute
			relative-point-vertical-precision-code	New attribute
	relative-point-reference-point-id			Attribute has been generalised to coordinate-system-id
			coordinate-system-id	New attribute
REPORTING-DATA	reporting-data-id	REPORTING-DATA	reporting-data-id	No change
			reporting-data-accuracy-code	No change
	reporting-data-category-code		reporting-data-category-code	No change
	reporting-data-counting-indicator-code		reporting-data-confirmation-indicator-code reporting-data-counting-indicator-code	New attribute No change
	reporting-data-credibility-code		reporting-data-credibility-code	No change
			reporting-data-reliability-code	New attribute
	reporting-data-reporting-date		reporting-data-reporting-date	No change
	reporting-data-reporting-time		reporting-data-reporting-time	No change
			reporting-data-source-type-code	New attribute
	reporting-data-timing-category-code		reporting-data-timing-category-code	No change
	reference-id		reference-id	No change
	reporting-data-reporting-organisation-id		reporting-data-reporting-organisation-id	No change
			rptd_ent_cat_code	New PHYSICAL ONLY attribute



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Entity Name	Attribute Name	Entity Name	Attribute Name	
REPORTING-DATA-ABSOLUTE-TIMING	reporting-data-absolute-timing-reporting-data-id	REPORTING-DATA-ABSOLUTE-TIMING	reporting-data-absolute-timing-reporting-data-id	No change
	reporting-data-absolute-timing-duration		reporting-data-absolute-timing-duration	No change
	reporting-data-absolute-timing-effective-date		reporting-data-absolute-timing-effective-date	No change
	reporting-data-absolute-timing-effective-time		reporting-data-absolute-timing-effective-time	No change
	reporting-data-absolute-timing-effective-time-precision-code		reporting-data-absolute-timing-effective-time-precision-code	No change
REPORTING-DATA-RELATIVE-TIMING	reporting-data-relative-timing-reporting-data-id	REPORTING-DATA-RELATIVE-TIMING	reporting-data-relative-timing-reporting-data-id	No change
	reporting-data-relative-timing-offset-duration		reporting-data-relative-timing-offset-duration	No change
	reporting-data-relative-timing-reference-action-task-id		reporting-data-relative-timing-reference-action-task-id	No change
REQUEST	request-id	REQUEST	request-id	No change
	request-category-code		request-category-code	No change
	request-immediate-interestindicator-code		request-immediate-interest-indicator-code	No change
REQUEST-ANSWER	request-id	REQUEST-ANSWER	request-id	No change
	request-answer-index		request-answer-index	No change
	request-answer-category-code		request-answer-category-code	No change
	reporting-data-id		reporting-data-id	No change
REQUEST-ANSWER-ELEMENT	request-id	REQUEST-ANSWER-ELEMENT	request-id	No change
	request-answer-index		request-answer-index	No change
	reporting-data-id		reporting-data-id	No change
ROUTE	route-id	ROUTE	route-id	No change
	route-direction-usage-code		route-direction-usage-code	No change
	route-military-load-classification-one-way-tracked-code			Attribute has been deleted
	route-military-load-classification-one-way-wheeled-code			Attribute has been deleted
	route-military-load-classification-two-way-tracked-code			Attribute has been deleted
	route-military-load-classification-two-way-wheeled-code			Attribute has been deleted
	route-mobility-code		route-mobility-code	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
RULE-OF-ENGAGEMENT	rule-of-engagement-id	RULE-OF-ENGAGEMENT	rule-of-engagement-id	No change
	rule-of-engagement-name		rule-of-engagement-name	No change
	rule-of-engagement-description-text		rule-of-engagement-description-text	No change
			owning-organisation-id	New attribute
		SPHERE-VOLUME	sphere-volume-id	New structure
			sphere-volume-radius-dimension	New structure
			sphere-volume-centre-pointid	New structure
STORAGE-CAPABILITY	storage-capability-id	STORAGE-CAPABILITY	storage-capability-id	New Entity definition
	materiel-type-id		materiel-type-id	No change
SUPPORT-UNIT-TYPE				Entity has been deleted
	support-unit-type-id			Attribute has been deleted
	support-unit-type-arm-code			Values transferred to unit-type-arm-category-code
SURFACE	surface-id	SURFACE	surface-id	No change
	surface-category-code		surface-category-code	No change
	surface-reference-point-id			Attribute has been deleted
SURFACE-REGION	surface-region-id			Structure has been replaced in the re-design of LOCATION
	surface-region-reference-point-description-code			Structure has been replaced in the re-design of LOCATION
SURFACE-REGION-BOUNDING-LINE	surface-region-id			Structure has been replaced in the re-design of LOCATION
	line-id			Structure has been replaced in the re-design of LOCATION
		SURFACE-VOLUME	surface-volume-id	Structure has been replaced in the re-design of LOCATION
			surface-volume-defining-surface-id	Structure has been replaced in the re-design of LOCATION
SURVEILLANCE-CAPABILITY	surveillance-capability-id	SURVEILLANCE-CAPABILITY	surveillance-capability-id	New Entity definition
	surveillance-capability-category-code		surveillance-capability-category-code	No change
TARGET	action-id	TARGET	action-id	No change
	action-objective-index		action-objective-index	No change
	target-engagementauthority-code		target-engagementauthority-code	No change

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Entity Name	Attribute Name	Entity Name	Attribute Name	
TARGET-MARKING	target-vicinity-duration	TARGET-MARKING	target-vicinity-duration	No change
	action-id		action-id	No change
	action-objective-index		action-objective-index	No change
	target-marking-index		target-marking-index	No change
	target-marking-method-code		target-marking-method-code	No change
	target-marking-start-date		target-marking-start-date	No change
	target-marking-start-time		target-marking-start-time	No change
	target-marking-using-organisation-id		target-marking-using-organisation-id	No change
		TARGET-PERSONNEL-PROTECTION	action-id	New structure
			action-objective-index	New structure
			target-personnel-protection-category-code	New structure
			reporting-data-id	New structure
		TASK-FORMATION-TYPE	task-formation-type-id	New structure
			task-formation-type-category-code	New structure
		TRACK-AREA	track-area-id	New structure
			track-area-left-width-dimension	New structure
			track-area-right-width-dimension	New structure
			track-area-begin-point-id	New structure
			track-area-end-point-id	New structure
UNIT	unit-id	UNIT	unit-id	No change
	unit-formal-abbreviated-name		unit-formal-abbreviated-name	No change
UNIT-TYPE	unit-type-id	UNIT-TYPE	unit-type-id	No change
	unit-type-category-code		unit-type-category-code	No change
			unit-type-arm-category-code	Aggregation of codes from combat-unit-type-arm-code and support-unit-type-arm-code
			unit-type-arm-specialisation-code	New attribute
	unit-type-mobility-code			Attribute deleted; functionality moved to mobility-capability-category-code
	unit-type-service-code			Attribute deleted; functionality moved to military-organisation-type-service-code

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Entity Name	Attribute Name	Entity Name	Attribute Name	
	unit-type-size-code		unit-type-size-code	No change
	unit-type-principal-equipment-type-id		unit-type-principal-equipment-type-id	No change
			unit-type-supported-military-organisation-type-id	New attribute
		UXO-STATUS	uxo-status-id	New structure
			object-item-status-index	New structure
			uxo-status-exposure-code	New structure
			uxo-status-qualifier-code	New structure
		VEHICLE-TYPE	vehicle-type-id	New structure
			vehicle-type-category-code	New structure
		VERTICAL-DISTANCE	vertical-distance-id	New structure
			vertical-distance-category-code	New structure
			vertical-distance-dimension	New structure
			vertical-distance-precision-code	New structure
		VESSEL-TYPE	vessel-type-id	New structure
			vessel-type-category-code	New structure
			vessel-type-subcategory-code	New structure
VISIBILITY	visibility-id	VISIBILITY	visibility-id	No change
	visibility-category-code		visibility-category-code	No change
	visibility-direction-code		visibility-direction-code	No change
	visibility-range-dimension		visibility-range-dimension	No change
WIND	wind-id	WIND	wind-id	No change
	wind-category-code		wind-category-code	No change
	wind-direction-angle		wind-direction-angle	No change
	wind-speed-rate		wind-speed-rate	No change
			wind-nbc-yield-qualifier-code	New attribute

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